

## Word 4.0 User Interface Makes It Easier to Use

By Michael J. Miller

First  
Look

*InfoWorld recently examined an unannounced beta release of Microsoft Word 4.0. The version we used was not quite finished, though it does spotlight several changes from Word 3.1.*

Word 4.0 adds a number of significant new features, including macros and text retrieval. But most impressive are a number of relatively minor changes to the user interface that, together, make it much easier to use.

The biggest change is simply the way you move around the cursor commands. Previously, you had to use the space bar and the tab key; in Word 4.0, you can finally use the arrow

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## Long-Awaited Network 2.1 Draws Praise From LAN Users

By Mark Stephens and Edward Warner

Novell's long-awaited Network Version 2.1, unveiled today, was largely praised by users who previewed it last week, although some found fault in its electronic mail and print support.

SFT Network V2.1, a 100-user version that will cost \$4,695 and ship in the fourth quarter, includes all the features of Level II V2.0a, Novell said. It also includes the previously optional Transaction Tracking

System, plus programming interfaces and more than 100 network management features.

Users who saw a demonstration in Westboro, Massachusetts, directed most of their praise at the software's account-keeping. Queen Booker, director of user services for the Massachusetts Budget Bureau, said she was pleased "that now you can charge people for [net-

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## Compusystems Mail-Order Firm Under Investigation for Fraud

By Mark Brownstein

**WARNING:** If you placed an order to a computer mail-order firm called *Compusystems Co.* of Beverly Hills, CA, you may have been the victim of fraud.

Government investigators are looking for a man who placed an apparently fraudulent advertisement in *InfoWorld* and other magazines.

A federal investigator said

Compusystems Co. is apparently not a mail-order operation, but rather a "bust-out scam." The checks sent to the firm to buy products will be cashed, but no merchandise will be sent.

The ad on page 12 of the August 10 issue of *InfoWorld* was placed by a man calling himself Robert McConihay. McConihay sent credit docu-

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JOHN SCULLEY

## Hypercard Steals Show At Macworld Exposition

By Laurie Flynn

BOSTON — Apple's new Hypercard software took center stage at the Macworld Expo here as attendees tried to gain a better understanding of the new technology.

The unusual new program,

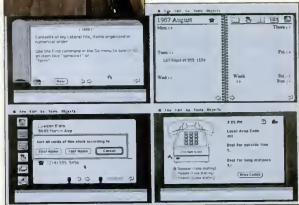
which will be shipped with every Macintosh sold after September 15, enables users to create and customize their own applications, including text, graphics, video, and sound, organizing information by context rather than hierarchically.

"Hypercard opens up the Macintosh software architecture in much the way the Macintosh II opened up Mac hardware," said Apple chairman John Sculley.

Hypercard uses the metaphor of stacks of cards, where each card is the equivalent of a database record containing up to 32K of information. The user can determine how the cards are linked to each other, and a powerful scripting language lets the user customize the application. Hypercard users can also access cards residing on another Macintosh running on the same network.

Described by its developer,

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Speaking at Macworld Expo, Apple chairman John Sculley said the Hypercard opens up the Mac's software architecture. A montage of four separate screens demonstrates some of the product's features.

## PCs, PS/2s May Run Hypercard Soon

By Scott Mace

BOSTON — IBM PCs and PS/2s may be reading and running Apple Hypercard files as early as next month.

Owl International, developer of the Guide hypermedia authoring system, hopes to show an enhanced version of Guide, code-named William Tell, running under Microsoft Windows 2.0 in September, according to

Owl International president Alan M. Boyd.

"Apple has legitimized the concept of hypertext," Boyd said. "This has created a tremendous opportunity for us to deliver even more capabilities on other computers."

The current Guide, Version 1.0, will be updated for both the Macintosh and PC. Guide 2.0

for the Macintosh is scheduled for a September release priced at \$199.95, Boyd said.

The William Tell program will be available for DOS by the end of the year, and Owl also plans versions for OS/2, Unix, and possibly other personal computers, such as the Atari ST, Commodore Amiga, and Apple

[Continued on Page 8](#)

### AT DEADLINE

## AT&T to Announce Two 386 Systems

AT&T will announce on September 2 in New York two 80386 systems being produced by Ing C. Olivetti, according to industry sources.

AT&T will sell relabeled versions of Olivetti's 16-MHz M380W desktop and 20-MHz M380T tower systems, said one source close to both companies. (See "Olivetti PCs to Challenge IBM PS/2 Line," June 29.) The relabeled M380W is expected to be available in the fourth quarter, with the M380T to follow in early 1988. Names and pricing of the new systems have not been set, the source said, but the desktop will be priced

competitively with the Compaq Deskpro 386, and the tower model will be targeted to compete with IBM's Model 80.

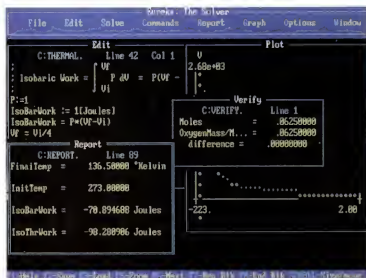
"They are going to announce the 80386 machines made by Olivetti — at least two of the three models offered," confirmed Alvin J. Lynd, president of consulting firm QA Systems Inc. in Morristown, New Jersey, which publishes a newsletter on AT&T. "Two of them were taken up for evaluation by AT&T. They've had their hands on them for about a month now."

— Tom Moran

[Continued on Page 3](#)

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Stephen Randy Davis,  
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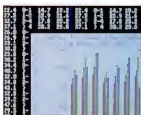
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## Tops Gets Access To Dbase Files

A program introduced at the Macworld Expo last week lets Macintosh users access Dbase files over Centram's Topsy network and compose stylized reports based on files created with Ashton-Tate's database product, its vendor said.

Detente Reports will import any Dbase file without changing the source file and without translation, according to vendor WOS Data Systems Inc. of Lawrence, Kansas. The product, to be marketed by WOS Data and Topsy vendor Centram Systems West of Berkeley, California, will be priced at \$189.50, WOS Data Systems said. As many as 254 fields may be calculated within the report, the vendor added. Detente Reports supports 255 fields, running totals, subtotals, sort fields, and grand totals. It is not copy-protected and allows users to preview the report and insert graphics into it, WOS Data Systems said.

At Macworld Expo last week Centram Systems also said it will soon support both Ethernet and IBM's Token Ring LANs on its Topsy network. Centram also privately demonstrated at Macworld Expo a Topsy version that will enable users to move data between a VAX running VMS and other Macintosh, DOS, or Unix systems on the network. The price and delivery date of that version have not been established, though Centram officials estimate that it will ship early next year.

—Edward Warner and Laurie Flynn

## Hyundai to Sell PCs Under Own Label

To make good on a promise made at spring Comdex, Hyundai Electronics America of Santa Clara, California, said it will begin selling PCs under its own label to dealers and business end-users.

A small-footprint PC AT-compatible system will be announced in September at PC Expo, the company said. The system will be bundled with Electric Desk integrated software from Alpha Software Corp., according to a Hyundai spokeswoman. Hyundai did not reveal a price for the new system but said it is slated for shipment in September. The company has previously sold its systems to distributors who relabeled them, but at spring Comdex it announced its intention to market PCs under its own label.

—Tom Moran

## Ashton-Tate Threatens Dbase Committee

The Dbase Standards committee, a group of Dbase clone and compiler vendors and VARs trying to develop a standardized version of Dbase, may soon be the target of Ashton-Tate, which until recently had been neutral about the work of the committee. One hour before the committee's second phone conference on August 6, Ashton-Tate observer Joe Budge called committee director and Wallsoft president Martin Rinehart to say he would no longer be an observer.

According to Rinehart, an Ashton-Tate attorney told him the Dbase publisher's legal department would be sending the committee a letter expressing concerns over the committee's use of the proprietary Dbase trademark. To date, Rinehart said he has not received the letter. But the committee's work continues, with a draft specification of standard existing Dbase syntax now being circulated, Rinehart said.

—Scott Mace

## Paradise Slashes Prices of EGA Boards

Responding to what it sees as a trend in the EGA market, Paradise Systems Inc. of South San Francisco, California, last week cut prices of its EGA boards by up to 28 percent. A spokesman for Paradise said the price cuts are in preparation of an "imminent" product introduction expected to occur in 30 to 45 days. The price of the company's Autoswitch EGA-480 Card dropped 28 percent, from \$479 to \$349, its Autoswitch EGA-350 Card dropped from \$349 to \$299, and the Basic EGA Card was cut by 20 percent from \$249 to \$199.

—Tom Moran

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# EMS Update Gives DOS Improved Multitasking Specs to Support 32MB Ceiling

By Jeff Angus

Technological additions to the Lotus-Intel-Microsoft EMS (Expanded Memory Specification) being announced by the companies this week foreshadow changes in DOS applications, including multitasking and interaction between programs, according to vendors who plan to develop to the new specs.

EMS 4.0 is the first update of the original Version 3.2 launched in April 1985. A cooperative effort between Intel, Lotus Development Corp., and Microsoft Corp., EMS currently allows programs to make use of memory beyond 640K. An Intel representative said the firm expects no hardware announcements from vendors at the meeting.

The update will enable MS-DOS to better handle multiple programs at once so users need not switch to OS/2 for that feature, said Robert Carr, chief scientist at Ashton-Tate. However, Carr expects that OS/2 will provide special capabilities that will make it indispensable.

EMS 4.0 incorporates suggestions from vendors who wrote products to the old standard and others who haven't previously supported it. Key features include the capability to execute program code from expanded memory, including memory-resident programs; boosting the expanded memory ceiling from 8 to 32 megabytes; and the capability for multiple programs

to use expanded memory at the same time. Programs for the 3.2 standard will also run under 4.0; but some that emulate expanded memory, unless written for the 80386 chip, won't run the new standard.

Quarterdeck Office Systems plans to introduce an update of its Quarterdeck Expanded Memory Manager (QEMM) and QEMM PS/2 this week, said company president Therese Myers. The new QEMM supports EMS 4.0 so large programs like Paradox 2.0 can run in the expanded memory. QEMM PS/2 will emulate EMS 4.0 for use with IBM's memory expansion boards for the PS/2 Models 50 and 60, providing multitasking with more than 640K of memory.

"What's wonderful for the user is that hardware providers are now validating the concept of DOS multitasking," Myers said. "It means Desquiv can now break the 640K barrier with more programs and on more machines."

The first noticeable change in EMS 4.0 products will be the elimination of "RAM cram," the overstuffing of main memory with "terminate and stay resident" (TSR) programs, Carr said.

Borland International, publisher of Sidekick and other TSR programs, endorses the new standard and believes it provides a much more effective way to advance beyond 640K in the DOS environment, said Dick Gorman, marketing manager for Borland's Ansa subsidiary.

Carr said Ashton-Tate will support appropriate products in the new standard, as will Symantec Corp., a spokeswoman said.

## Smartcom II Enhancements Announced

BOSTON — Hayes Microcomputer Products Inc. announced an upgrade to the Smartcom II communications software for the Apple Macintosh.

Hayes said it has enhanced the program to make it compatible with Apple's new Multifinder operating system, as well as with the Mac SE, Mac II, and the Hayes V-series high-speed modem products.

The enhancements permit Smartcom II to coexist with other Multifinder-compatible applications, the company said. The \$149 product will ship in October. Upgrades for owners of earlier versions of Smartcom II will be priced at a discount to the original purchase date.

Hayes Microcomputer Products Inc., 705 Westech Drive, Norcross, GA 30092; (404) 449-8791.

— Robert Snowden Jones

## Zenith Wins Massive Laptop Contract With Military

By Renee Mathews

A competitive battle for a three-year contract calling for 90,000 laptop computers came to an end last week when Zenith Data Systems Corp. edged out Toshiba to win the largest contract for laptops ever awarded by the U.S. government.

To meet the terms of the \$104.5 million contract, Zenith is expected to supply the U.S. Navy, Air Force, Army, and Defense Logistics Agency with an estimated 90,000 battery-operable dual-floppy and Winchester hard disk drive versions of its Z-181 series laptop computers.

The award of this contract

marks the latest in a string of successful bids placed by Zenith in the government marketplace. In 1986 the company was awarded back-to-back contracts to supply the Internal Revenue Service with as many as 18,000 units of its Z-171 portable computer ("Zenith Wins IRS Contract," March 3, 1986), followed by the signing of a three-year contract to supply approximately 90,000 microcomputers to the Air Force, Navy, Marines, and other armed forces agencies. (See "Zenith Awarded Military Contract," March 10, 1986.)

According to Jocelyn Young,

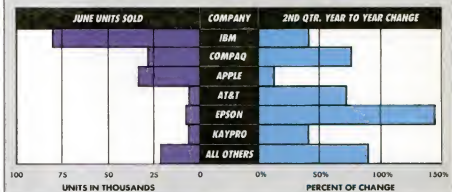
an industry analyst at Future Computing, a market research company in Dallas, Texas, Zenith's success with the government is due to the company's ability to have a narrow focus on a target market. "They've [Zenith] tapped into the government marketplace in terms of specific applications," said Young.

Zenith's successful track record with the government has given them a lot of leverage, Young said. "The more contracts they are awarded [by the government], the harder it is for competitors to penetrate that market."

The awarding of this contract will definitely help Zenith's market share in the laptop field, according to Bill Lempias, industry analyst at Dataquest Inc., a San Jose, California-based market research company. "Depending on what happens to Toshiba [regarding the recent indictment against a Toshiba subsidiary that charges the company with illegally selling machine tools to the Soviet Union], Zenith could become the industry leader for true laptops," said Lempias.

Dataquest defines "true laptops" as units capable of running on batteries.

## PC Sales by Manufacturer



PC sales in the usually slow month of June hit a record high this year, according to Storeboard Inc. Total sales of 180,000 units was the highest volume the firm has recorded in four years of tracking retail sales.

## IBM Cutting Off PC ATs, Dealers Say

By Alice LaPlante

If you want to get your hands on a "classic" IBM PC AT, you'd better act soon.

Although IBM has not yet officially proclaimed it, last week dealers were quietly notified that after current orders are filled, the 80286-based PC AT 339 — the only remaining PC in its pre-PS/2 PC line — would no longer be available.

IBM announced its intention to terminate the 339 AT approximately a month ago, but at that time said it hadn't yet decided how many more of the machines to manufacture before closing down the line. (See "IBM Plans to Terminate Remainder of PC Line," June 29.)

But although IBM reassured its dealers that it would solicit their input before ceasing to build the popular corporate machine, dealers said they weren't consulted before the decision was made.

"At a dealer meeting in New York, IBM's Ned Lautenbach told us that IBM would survey its dealer network to make sure enough ATs were built to satisfy our customers' demands," said Bruce Downing, vice president

of information resources for Today's Computers Business Centers, an 80-dealership franchisor headquartered in Exton, Pennsylvania. "But my people tell me that IBM never really checked into what we needed; instead, IBM has been heavily pushing the Models 50 and 60 in lieu of the AT."

Downing said that his firm has enough ATs to fulfill current orders plus make a few additional sales.

Irwin Feder, regional sales manager for a Florida chain of Computerland stores based in North Miami Beach, Florida, said that although official word about AT availability has not yet been released by Computerland's corporate offices, his local IBM sales representative told him that ATs were now on an "as available" list and that they would be increasingly difficult to find.

Meanwhile, PC sales for the usually slow month of June reached a record high, according to Dallas-based market research firm Storeboard Inc. Total sales in June of 180,000 units represented the highest unit sales

volume since Storeboard started tracking the retail sales channel in 1983.

The abundant availability of IBM's new PS/2 line: Apple's new Mac SE and Mac II; beefed-up production of Compaq's Deskpro 286, 386, and Portable II machines; and the low prices of IBM PC XT and ATs were cited as the causes of the sales increase.

The increase of June 1987 sales over June 1986 sales was more than 46 percent. Compaq Computer Corp. had the greatest increase in total unit sales with a gain of 34.5 percent over the previous month's sales, and a nearly 80 percent increase over June 1986 sales.

Although sales of all PS/2 models — almost 30,000 units — were only 15 percent greater than the previous month, sales of the Model 50 rose almost 40 percent, and sales of the Model 60 nearly 60 percent over the previous month, due to increased availability, according to Storeboard. Limited supplies of the Model 80 also began to appear in the retail channel in late June.



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 This is the exact computer featured in our network system. Combine the power of Intel's 80286 chip, keyboard-switchable 12 Mhz with 0 or 1 wait states for lightning-fast processing, eight expansion I/O slots, CIO/calendar, S/P ports, 512K, 1.2 MB floppy and F/H controller, MS-DOS 3.2 and a 13-month warranty. All at a remarkable price!

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Everything you need for incredible desktop publishing. Start off with an Accol 900 AT compatible computer with 512K and 1.2 MB floppy disk drive. Add Hercules compatible mono graphics card, 14" hires FLAT SCREEN soft-white monochrome monitor, and a Turbo 20 hard drive.

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Plus Pagemaker, Microsoft Windows, Microsoft Mouse, and the premier word-processing package for quality desktop publishing, Microsoft Word. When!

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Need to connect your business operations with power, versatility and ease of use? The Alpha Omega Network/Accounting System has it all. I stand behind this network package all the way," says our president, Steve Kesseldian. "We use it every day, and it's the easiest and most reliable network and accounting package ever. You can put it to work right out of the box."

*Steve Kesseldian*

Talk about a complete system! You get three computers, including the great new Intelligent AT, which runs at an incredible 12 Mhz with no accelerator card needed, jumpable-selectable for 0 or 1 wait states. And the intelligent has an AST-style keyboard with 12 function keys, 1.2 MB floppy disk drive and 30MB Seagate hard disk, with high-speed 28 ms. access time.

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Next, add Novell's 286 G Net. Novell invented the file server and continues to be the undisputed industry leader with more than 4,000 users world wide.

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Major Price Cuts! Most Model! COMPUTER BUYING CLUB dubbed them "Best Buy of 1986." PC WORLD called the "best performer," while PC WEEK noted they need "only DOS and a screwdriver to install. Includes hard disk controller and all cables."

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 45 Mb 3.5" Hi-High, HD, high perf. (Sug. Retail \$1095) **\$599**  
**TURBO CARD DISK 20™** **\$349**  
 (Sug. Retail \$600)  
**TURBO CARD DISK 30™** **\$499**  
 (Sug. Retail \$800)

IBM AT\* and Compatibles  
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Take it Up to Warp Speed Scotty! With an average access time of 28 ms. (more than twice as fast as our Turbo series), these are the fastest hard disk drives on the market. See for yourself why Alpha Omega's Warp Series "goes where no drives have gone before!"

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 68 Mb 3.5" 5.25" Full-Hi, HD, 28 MS, REL. high perf. (Sug. Retail \$1599) **\$999**

IBM AT\* and Compatibles  
**WARP 40 AT™** **\$599**  
 42.7 Mb 3.5" 5.25" Full-Hi, HD, 28 MS, REL. high perf. (Sug. Retail \$1399) **\$799**  
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Alpha Omega offers you friendly technical support on all of our products. If you run into a snag, just give us a call on our Tech Support Hot Line at (818) 345-0386. We'll have you up and running fast!



Why take chances? We back every sale with a 30-day, money-back guarantee! We get 30 days to make sure our products perform the way our ad claims, or we refund your money. All products manufactured by Alpha Omega are covered by our incredible 13-month defective exchange warranty. With the first 30 days of this warranty, if anything goes wrong with any product and we can't fix it OVERNIGHT, we'll rush you a brand new replacement free! JOIN OUR MORE THAN 8,000 SATISFIED CUSTOMERS!



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The fine print. All products are pretested before delivery. Defective returns must be accompanied by an RMA number so that we may process the order quickly. Please include \$5 for shipping and handling on prepaid orders. There will be an additional \$4 surcharge for COD orders. California residents must include 6.5% sales tax. Prices subject to change without notice.

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# Chip Sets Promise Higher Performance, Maker Says

By Renee Mathews

To reduce chip count and support development of systems compatible with IBM PCs, XTs, ATs, and the PS/2 family, Faraday Electronics has unveiled a series of chip sets that it said will mean higher performance and lower prices.

The surface-mount components of the FE3500 will work with the 16-bit bus on an 80286 AT-type personal computer. The chip set provides the necessary core logic and memory and I/O control to build a completely integrated AT motherboard that can be consolidated into a form factor of less than 35

square inches, the firm said.

The FE2400 is a two-piece core logic set intended for Intel 8086-based XT compatibles. According to the company, the chip set will replace 96 components on a typical 8086-based PC XT system board and allow users to upgrade the performance of their existing systems to a level equal to or greater than the PS/2 Model 30.

The FE2400 is 100 percent compatible with 8086-based PC XT hardware and software and will run at system clock rates of 4.77, 7.15, or 9.54 MHz. The chip set will support the DOS-defined memory size with either 256K or 64K of RAM.

Both chip sets are available immediately to OEMs for evaluation, the company said.

Faraday Electronics, 749 N. Main Ave., Sunnyvale, CA 94086; (408) 749-1900.

# Hypercard

Continued From Page 1

II GS. Like Guide, William Tell will store information in free-form documents rather than cards; but Owl sold a version that uses the card metaphor to Apple's U.K. division last November.

William Tell users will be able to create the card format if desired, Boyd said. The program will be able to read in hypercard stacks and work with them within Guide in either free-form or card format, he said.

Chances are "99 percent" that someone from the MS-DOS or OS/2 world will replicate Hypercard, according to Hypercard creator Bill Atkinson, quoted in *The Complete Hypercard Handbook*, by Danny Goodman.

In that interview, Atkinson said he hopes that clones will be data compatible with Hypercard, so users can exchange stacks. Toward that end, Apple intends to make the Hypercard file formats public, Atkinson said. "We're actively going out and help people get it up on the PC," he said.

But Michael Holm, one of two Hypercard product managers at Apple, said release of the file format is "not in the works right now. There's been no discussion of that as far as I know."

Hypercard clones will also have to wrestle with "look and feel" issues, according to Paul Heckel, president of Quickview Systems of Los Altos, California. Heckel's Zoomracks program for the IBM PC uses the metaphor of packs of cards, rather than stacks of cards, and currently has graphics capabilities only on a version for the Atari ST, according to Heckel. Unlike Apple's Hypercard, Zoomracks can show the first lines of several cards at once, Heckel said.

# Network

Continued From Page 1

work] use." She can also assess the level of use and turn off one of the servers on her LAN to let built-up heat dissipate, she said.

According to Craig Burton, Novell's vice president of corporate marketing and development, Network 2.1 supports a virtual console, allowing the LAN administrator to operate from any LAN workstation.

The administrator is given more control over system access and can manage passwords, assign privileges, and gather accounting data. "We tried to make it as much like a traditional minicomputer or mainframe environment as we could," said Burton.

Steven Isenberg, senior software engineer at Interactive Images Inc. of Woburn, Massachusetts, said he liked the capability to see the LAN's parameters and to limit the amount of disk access permitted each user.

The product also includes fault tolerance features such as

duplicate directories and tables, hot fixes around bad disk sectors, and file mirroring and duplexing, Novell said.

Users said the product still lacked some features. "The [electronic] mail system on Novell stinks," Isenberg said. "We've gone to an independent vendor for our E-mail system." And although Novell said Network 2.1 featured enhanced spooler utilities, giving users access to any LAN printer, Booker said she still needs software from independent vendors to automate the print spooling and capture functions.

Novell said Network 2.1 includes value-added processes (VAPs) and value-added drivers (VADs). VAPs create an environment for developing multitasking programs in protected and real-time modes. VADs let developers build Network LANs using disk drives other than those certified by Novell.

Other new features include named queues, which allow servers to be named for functions such as printing, archiving, or providing access to a dedicated compiler or database engine;

and Indexed Turbo File Allocation Tables (FATs), which allow rapid searches of FATs on files of more than 2 megabytes.

Responding to rumors that Network 2.1 would support other networking protocols, Burton said Novell plans upgrades in early 1988 to support Microsoft's Server Message Block, Apple's AppleTalk File Protocol, and Sun Microsystems Inc.'s Network File System.

Two lower end versions of Network 2.1 will be available in the first quarter of 1988, Burton said. An entry-level \$13,95 version called Limited Network, to replace Network 86 and Advanced Network 86, will support up to five users per server and include an 80286 driver but will not support networking with other servers, fault tolerance, or transaction-tracking.

A new version of Advanced Network, to cost \$2,695, will support up to 100 users per server, allow servers to communicate, and prevent data from being written to bad sectors. clovett Inc., 122 E. 1700 South, Provo, UT 84601; (801) 379-5900.

# Fraud

Continued From Page 1

ments to *InfoWorld's* advertising department, stating that his company was founded in July 1979. An "audited" financial report and bank records, based on references from firms that apparently never existed, showed the company to have assets of over \$6 million, including \$4.9 million in inventory. The credit department at IDG, *InfoWorld's* parent company, approved the credit application.

"We're very careful with credit," said Stan Vanocur, *InfoWorld's* national advertising director. "The credit application was falsified well enough that we were fooled. We deal with scores of reputable mail-order firms, and we just weren't expecting this at a time when the computer mail-order business has become so responsible."

What wasn't immediately apparent was that all the records were fakes. The bank's phone number and a business reference range to special lines used by the advertiser, investigators said. In effect, he "played banker" and issued his own net worth statement, said an investigator. He confirmed that Compusystem's credit was clean. He "played CPA" and verified his net worth. Once the ad appeared, the phone lines were disconnected, the investigator said.

Order lines rang at answering services, which served as screens between the company and incoming calls. One answering service employee contacted by *InfoWorld* said she was "swamped" with complaints by angry callers who'd sent checks but received no product. "We all think something is wrong,"

## PRICE TO SAVE YOU MONEY<sup>BEST PRICES YET!</sup>

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Lotus 123 <b>\$195</b>	Paradox <b>\$195</b>	dBase III Plus <b>\$220</b>	Rapid File <b>\$299</b>	Multimate Advantage <b>\$179</b>	Word Perfect 4.2 <b>\$142</b>
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A portion of the Compusystems Co. advertisement that ran on page 12 in last week's *InfoWorld*.

she said. "The guy who runs the business told us to tell everybody the lines are busy. They never answer their phones."

When *InfoWorld* executives were made aware of concerns that the ad was fraudulent, they immediately contacted state and federal authorities.

A number of agencies are currently investigating the company, but no charges have been filed. The address listed in the ad

(279 South Beverly Drive, Suite 320, Beverly Hills, California 90212) proved to be a mail drop — a rented post office box at a private company. Phone calls for "product support" go to a Pasadena answering service.

One government agent working on the case said that a dealer who called Compusystems was able to reach someone at the company. The dealer was ready to bring a cashier's check and a

truck to purchase advertised goods but was told by the merchandise manager that the merchandise was in a warehouse in Sacramento. The dealer said that he had a store in Sacramento and would have a truck pick up the merchandise. The person at Compusystems talked his way out of the sale.

Attempts by *InfoWorld* to contact officials of Compusystems were unsuccessful.

## How to Protect Yourself From Mail-Order Fraud

**T**he Compusystems mail-order scam raises the question of how users can be sure that the mail-order firm they select is legitimate.

One tip, provided by David Hall, chief executive officer of PC Connection, is basic consumer awareness: "If something looks too good to be true, it probably is," Hall said. He doubts that the Compusystems ad fooled many of his company's customers. "The prices were so low that people tend to be suspicious," he said.

But some users were fooled — at least temporarily — by the Compusystems ad. "Our call volume was down tremendously on Monday and Tuesday," said C. McDwayne, president of PC Pros, a mail-order retailer. "Finally the readers figured out that the ad was a fake."

Mail-order professionals and government agency investigators on the Compusystems case also advise you to make sure your order is taken by a company official and not an

answering service.

It is also advisable to check with the local attorney general's office, Chamber of Commerce, and Better Business Bureau before placing an order.

"See how they do business," one investigator warned. "If they put a deadline for receipt of orders and expect payment in advance of shipment, it can be a bust-out scheme."

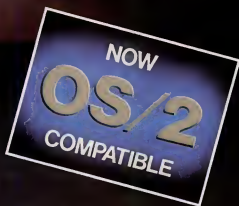
While checking with other users is a good idea, it may not provide accurate information on a new company that hasn't had time to earn a good (or bad) reputation.

Hall suggested making a small trial purchase before making a major buy. From the initial purchase, you can "see how quickly they ship and find out what kind of support they offer," he said. Hall also suggested talking to user groups to determine what kind of experiences the members have had with mail-order firms. Ultimately, he said, "your common sense has to work."



"THE A★STAR'S CPU PERFORMANCE  
IS SUBSTANTIALLY ABOVE THAT  
OF THE IBM PS/2 MODEL 60."

-INFOWORLD



# WHO CARES!

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But then you wouldn't be getting the exclusive ownership advantages that *only* the A★Star offers. Advantages like an 80286 CPU that runs the new MS OS/2 operating system and can also run at 6, 8, 10, 12, 14 and now...16 MHz! And you wouldn't be getting schematics. (Ours are free!) Or GE/RCA on-site maintenance. Or a no questions asked money-back guarantee. Oh, and there's one more little item you wouldn't get... peace of mind. Wells American has been making microcomputers longer than IBM!

In fact, we've probably been making microcomputers longer than *anybody*!

But hey, who are we kidding? Not everyone cares about quality, reputation, support or serviceability. That's why there are mail-order houses. And, as hard as it is to believe, not everyone cares about money or performance. Maybe that's why there's IBM (and Compaq®, and all the others). But, for computer users who *do* care, there is, fortunately, a vendor who also cares...Wells American. And, we'd like to prove it to you. Call us with the page number of this ad. It's worth a big discount on your next A★Star computer system. Call today. 803/796-7800. This offer *is* limited.



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1987  
**PC Graphics Shoot-out**  
National Computer  
Graphics Association

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60  
50  
40  
30  
20  
10  
0

**Harvard  
Graphics**

Mirage

Freelance  
Plus

35mm  
Express

Gem Draw  
Plus

Microsoft  
Chart

# Graphic achievement.

New Harvard Graphics took on the competition at the National Computer Graphics Association's 1987 Shoot-Out, and won. Hands down.

No small achievement, considering the contest required live, on-the-spot demonstrations before an audience of top corporate graphics evaluators. What impressed them most was Harvard's flexibility, quickness of response, high-quality output, and ease of use, all part of a

dramatic new feature set that includes:

More powerful business graphics, like mathematical calculations, and logarithmic charts.

New drawing tools, a symbols library, and editing functions like resize and move.

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And Harvard lets you do it all on one program.

New Harvard Graphics not only delivers results in competition, it can make a good impression on any given business day.

And that's no small achievement.



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## News Briefs

### Company Lowers Price Of LAN-Based Hard Disk

Automated Design has cut \$1,000 from the price of its 183-megabyte, Netware-compatible hard disk subsystem, and it has cut \$2,000 from its 366-megabyte subsystem.

The 28-millisecond hard disks, which include built-in battery back-up and surge protection, now cost \$6,995 and \$11,990, respectively. An upgrade from 183 megabytes to 366 megabytes is available at a cost of \$4,995.

Automated Design, 999 Walt Whitman Road, Melville, NY 11747; (516) 385-9008

### Simplexnet Software Now Available at Lower Cost

An eight-user license for Simplexware, Simplexnet Systems' network operating system for RS-232C-based PC LANs, can now be purchased for \$399. Previously, the product cost \$99 per user.

According to Simplexnet Systems, Simplexware is a DOS shell that loads as a terminate-and-stay-resident program for sharing personal computer peripherals and databases.

Simplexware runs on any Netbios-compatible computer running PC-DOS or MS-DOS 3.1 or later. Both dedicated and non-dedicated server configurations are supported by Simplexware. Electronic mail and printer service are included with the product.

Simplexnet Systems, 545 West Lambert Road, Suite A, Brea, CA 92621; (714) 526-5151.

### Firm Cuts Prices on Voice-Mail Products

Price cuts as steep as 60 percent were announced for products in the Watson line of voice-mail systems recently by Natural Microsystems Corp.

Effective immediately, Natural Microsystems said that its Watson product, which combines software with a Hayes-compatible 1,200-bps modem, was reduced in price from \$498 to \$199. The product provides voice mail, as well as support for dictation, call forwarding, auto-answer and auto-dial, according to the company.

Watson V15, a Watson add-on product for telemarketing, was reduced

Continued on Page 14

## Synoptics Unveils Twisted-Pair LAN Product Runs Ethernet on AT&T Telephone Wire

By Mark Stephens

Following 3Com Corp.'s demonstration a month ago of Ethernet on telephone wire, Synoptics Communications Inc. will announce today that its own implementation is available immediately and that it will run on all telephone wire installed by AT&T or its subsidiaries since 1964.

Unshielded Twisted-Pair Lattisnet, which the company first announced in January, uses a star topology. (See "Unshielded Twisted-Pair Wire to Support Ethernet Protocol," January 26.) An external transceiver is attached to the Ethernet adapter card in each workstation and connected

through two pairs of regular telephone wire to a concentrator mounted in the telephone wiring closet. Two sizes of concentrators are available, with one supporting up to three eight-port cards and the other supporting up to eight eight-port cards. Multiple concentrators can be used for larger systems.

According to Synoptics, the concentrators contain all error-detection circuitry. They connect the incoming lines into a network and also offer circuitry bridging to a fiber optic backbone. For smaller networks not requiring a backbone, the fiber optic circuitry can be eliminated to save money, the company said.

Synoptics said the network costs \$500 per node, based on a fully populated 24-node system with fiber optic connect circuitry. Specifically, transceiver cards cost \$155, and eight-port concentrator boards cost \$1,900. An unpopulated 24-port concentrator chassis costs \$2,550, and a 64-port bare chassis is \$5,250. PCs must also have Ethernet adapters.

In a separate announcement, AT&T certified that Lattisnet will operate on any telephone system wired with AT&T's Premises Distribution System



The concentrator chassis holds up to 24 ports. A 64-port model, holding up to eight concentrator boards, is also available.

## AST Boards Compatible With 3270, Irma Boards

By Mark Brownstein

Two new lines of boards that provide compatibility with both IBM 3270 family of terminals and Digital Communications Associates Inc.'s Irma boards will be shown at next month's PC Expo.

The board families — the AST-COAXII and the AST-COAXIIA for the IBM PC and the IBM PS/2 Microchannel, respectively — are described by AST as the "first of a new generation of completely software-loadable 3270 emulation products."

The boards support the emulation of a wide range of IBM's 3270 family of terminals and devices, including 3278 Types 2 through 5, 3279 Types 2a and 2b, 3279 Types 3a and 3b, 3178, 3179 and 3179 Type g.

A microprogrammable chip set built into the boards allows the user to select firmware instruction sets for IBM, Irma, or AST-3270 emulations. This also enables future modification of existing soft-loadable instruction sets, AST said.

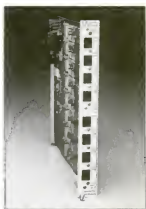
A complete family of COAXII 3270 products is planned, AST said. These products include the AST-3270/COAXII-CUT and AST-3270/COAXIIA-CUT boards, which will provide single session emulation; the AST-3270/COAXII-DFT and AST-3270/COAXII-G, which will support multiple sessions; and the AST-3270/COAXIIA-G and AST-3270/COAXIIA-G

boards, which will provide "high-function graphic terminal emulation," the company said.

The first of the new boards, the AST-3270/COAXII-CUT and AST-3270/COAXIIA-CUT single session products, will be available in October for \$895, the company said. The DFT and graphics products will be available in December, and their price is not yet determined, the company said.

AST said it plans to display the products at next month's PC Expo in New York.

AST Research Inc., 2121 Alton Ave., Irvine, CA, 92714; (714) 863-1333



The Lattisnet concentrator features an automatic status light for each line, making it easier to locate network problems.

(PDS) unshielded twisted-pair wiring. Though the PDS wiring standard was announced only a few years ago, wiring manufactured to that standard has been a feature of every AT&T telephone installation since 1964, including every AT&T digital PBX ever installed, AT&T said. "They're not going to get any brownie points for cost of the hardware," said Brad Baldwin, telecommunications analyst at Dataquest. "But the ease of installation and labor saving in moves and changes is bound to make this a very popular product with large customers."

Synoptics Communications Inc., 329 N. Bernardo Ave., Mountain View, CA 94043; (415) 960-1100.



One of these transceivers, which rests on a desk, is connected to the Ethernet adapter in each PC, and to telephone wire via an RJ-11 plug.

## NSA Product Line Supports LU0 Protocol

By Mark Brownstein

A line of products that support the LU0 protocol, a data format developed by IBM for its mainframe products more than a decade ago, is now available from Network Software Associates Inc.

Adapt SNA LU0 is a communications product that allows PCs, XT's, AT's, compatibles, and PS/2 computers to operate under IBM's Logical Unit 0 protocol. "There is still quite a few mainframe programs that use LU0," said Steven Chiu, NSA's vice president of marketing. The protocol has tradition-

ally been used for applications that didn't fit other LU classifications, he said.

The LU0 protocol is one that, up until now, has not been supported by PC-class microcomputers, NSA's Chiu said. "Although there are many mainframe programs that use LU0, a PC was not able to interact with them," Chiu said.

Included in the package are two levels of LU0 functions — referred to as verbs — as well as "a complete applications subsystem and interactive implementation tool kit," NSA said.

In order to interact with mainframe LU0 data, users need to develop their own PC programs. Adapt SNA LU0 includes software tools to simplify some of the interfacing tasks necessary, the company said.

Adapt SNA LU0 is available immediately in a 20-user site license for \$50,000, Chiu said. PCs also require an SDLC adapter card, the company said. Network Software Associates Inc., 22982 Mill Creek, Laguna Hills, CA 92653; (714) 768-4013.

## • OS/2 OPTIONS

## Microsoft Seeks LAN Manager OEMs

By Edward Warner

If manufacturers of PC compatibles go along with a Microsoft plan, next year users will be able to transparently access data on any OS/2-based PC in a LAN, provided they have the proper clearance.

The software that Microsoft says will bring about this and other networking breakthroughs is the LAN Manager set of networking functions, which Microsoft announced with OS/2 in April and said it will ship next year.

Microsoft, which is offering the product to its hardware OEMs as an extra-cost OS/2 option, wants to make LAN Manager a standard in an area where no clear standard yet exists. But to do so, it needs large PC hardware vendors to commit to bundling LAN Manager with the OS/2 they provide

to their customers, said Thomas White, chairman of Infonetix Inc., a Santa Clara, California, data communications consulting firm.

Will those vendors get in line?

IBM, which has promised to add communications features to its OS/2 Extended Edition, last week revealed that it is developing those features itself, although it had licensed MS-Net, LAN Manager's predecessor, for PC-DOS. "The communications facility [for Extended Edition] is being written by IBM," said spokesman Scott Brooks.

Compaq, one of the first PC-compatible vendors to announce OS/2 support, would not say whether it would support the LAN Manager, according to spokesman Jeff Stives. "Compaq traditionally does not

bundle third-party products other than operating systems in its computers," he said.

And while network software vendor 3Com Corp. has agreed to license LAN Manager, 3Com competitor Novell Inc. said it will not license the product. "There is no final indication that IBM will actually embrace the LAN Manager," said Craig Burton, Novell's vice president of corporate marketing and development. "Much of what Microsoft and 3Com are doing is an attempt to gang up on IBM and force it to accept the LAN Manager as a standard."

To motivate presently uncommitted hardware vendors, Microsoft could be planning to offer LAN Manager for free. White said. "To be successful [with LAN Manager], they're going to have to bundle it together," just as Apple Computer Inc. offers AppleLink network software as a part of its Finder software for the Macintosh, he said.

According to White, Paul Maritz, general manager of Microsoft's networking business unit, told White and three other Infonetix executives earlier this month that Microsoft would include LAN Manager as a "freebie" to OS/2 licensees. Maritz told *InfoWorld* this was incorrect. White responded, "I know what I heard. All four of us heard him say it was included."

If LAN Manager can win enough Microsoft OEMs, networked users of OS/2 machines will gain the "multituser environment" in which they may share applications and files, said Maritz. "For OS/2 to fulfill its potential it must be multituser," he said.

Maritz said LAN Manager is backwards compatible with MS-Net but offers improved performance and administration features such as security. Its wiring interface "makes installation and [network] administration within the reach of mere mortals," he said.

— Mark Stephens also contributed to this article.



Zenith's Network Communications Unit converts information in IBM 3270 format for use on Zenith's Z-LAN broadband LAN.

## Device Lets IBM Mainframes Connect to Zenith Z-LAN 500

Zenith Electronics Corp. has announced a device that allows IBM mainframes to connect to the company's Z-LAN 500 broadband LAN.

The Z-LAN 500A has 16 ports on one side that can communicate with up to 16 ports on an IBM 3174 or 3274 cluster controller connected to a mainframe. On the other side, users plug in a network communications unit (NCU), which connects up to 16 PCs, printers, and IBM or asynchronous terminals.

The network communications unit converts data from IBM 3270 format to the Z-LAN's format, the company said. Features such as color, highlighting, and terminal emulation are supported.

The device costs \$10,900. Terminal interface NCUs with four, eight, and 16 ports are available for \$2,390, \$3,590, and \$6,390, respectively.

Zenith Electronics Corp., 1000 Milwaukee Ave., Glenview, IL 60025; (312) 391-8181. — Sharon Fisher

## Microm to Introduce 2 Starlan Adapter Cards

By Mark Stephens

Expanding into support for the Starlan network as well as the Ethernet network, Microm Systems Inc. said that it will introduce in September a pair of Starlan adapter cards for personal computers, as well as a 12-port Starlan hub.

According to the company, both of the personal computer adapter cards use an 8-bit bus and thus will operate in an IBM PC, XT, AT, or compatible computer. The \$199 card is intended for use in a single workstation, connecting it to the Starlan network. A \$350 card features buffered input, allowing a personal computer to operate as a Starlan network server.

Starcenter, the 12-port Starlan hub unit, will cost \$625, according to the company. Though only 12 devices can be connected to each Starcenter unit, Microm said that Starcenters can be "cascaded," al-

lowing hundreds of devices to be attached.

In addition Microm said that it will be shipping in September its 8-4-1 Ethernet multiport transceiver control box. The company said that this product will allow up to eight incoming Ethernet cables to be multiplexed on a single transceiver, allowing one \$995 control box to supplant up to seven \$250 transceivers. Like the Starcenters, these Ethernet control boxes can be "cascaded," which allows dozens or hundreds of connections to a single transceiver. For example, this configuration would avoid the problem of having many transceivers, each separated by the minimum 8 feet of Ethernet cable required by the IEEE 802.3 specification.

Microm Systems Inc., 155 Swanson Road, Boxborough, MA 01719; (617) 263-9929.

program's dialing directory. Script files, pop-up operation, and Kermit and Xmodem file transfer protocols are also supported, according to the company.

Users can configure Smartmove with a window-based system, and can save up to 16 configurations in a dialing directory.

Smartmove costs \$149. The company also announced that its Smarterm fam-

ily of terminal emulation products is available on 3½-inch disks. Users of current versions can exchange their disks for \$15; users of older versions must upgrade for \$75 for Smarterm 240 and \$50 for other products. Versions on 3½-inch disks are available for no extra charge if that size is specified when ordered.

Persoft Inc., U.W. Research Park, 465 Science Drive, Madison, WI 53711; (608) 273-6000.

## \$89 Kortek Program Emulates Crosstalk, Adds on Features

Freeway Advanced 2.1 from Kortek Inc. is an \$89.95 communications program that emulates Crosstalk but adds several features.

The menu interface makes it easier for less experienced users to work with and allows customization in experts' sessions, according to product manager Carey White. Version 2.1 also adds an on-line page editor. White said the editor is a productive addition because services such as MCI Mail and

bulletin boards tend to have weak editing capabilities.

Version 2.1 adds the capability to escape to DOS, password protections, an auto-dial feature, and autotitles — log-on scripts that store sequences of keystrokes for fast access.

Kortek also offers a subset of the product, Freeway Regular, Version 2.1 for \$24.95.

Kortek Inc., 505 Hamilton Ave., Palo Alto, CA 94301; (415) 327-4555.

— Jeff Angus

## Server Announces First in Series Of Programs for Serial-Port LANs

Server Technology Inc. announced last week Easy Calendar, the first in a series of application programs for serial-port LANs.

Users can schedule appointments for individuals or groups. A manager could schedule a meeting for all employees. The product also supports to-do lists that can be printed out each month and a news function that broadcasts messages to all users on a specific date.

Easy Calendar runs on the

company's Easy LAN, Version 3.0 network or on any other Netibus-compatible LAN, according to the company. In addition, PC and laptop users can call up the system or communicate through the company's PRX, according to Server Technology.

A six-user version of the product costs \$199.95, while a 25-user version of the product costs \$349.95. The program runs on PCs, XT's, ATs, compatibles, and the PS/2.

Server Technology Inc., 140 Kiefer Court, Sunnyvale, CA 94086; (408) 738-8377.

— Sharon Fisher

## Persoft to Ship Terminal Emulation Program

By Sharon Fisher

Replacing its Smarterm 100 terminal emulation program, Persoft Inc. will begin shipping Smartmove, which features background file transfer, on September 1.

The product emulates Digital Equipment Corp.'s VT-100 terminal and allows users to transfer files in the background while performing other tasks on the PC. Users can start a communications session either from the system prompt or from the

# If anyone can use a LAN, how come most computer dealers can't?

These days, everybody says LANs are the easiest things you've ever seen. But when you go to a computer store and ask to actually see one, it's a different story. Nine times out of ten, the salesman will refer you to someone in the service department who'll describe the LAN he's installed for somebody else. Which means in most cases, you won't see a demo at all.

It's an odd way to make a sale, but it's not the salesman's fault. Networks offered by IBM, Novell and 3Com are based upon complex mainframe technology. They're so difficult to use, most retailers focus product training on the technical service staff.

So, most salesmen can't demo how to (1) switch printers (2) look at the print queue (3) pass a file to another station or (4) send electronic mail.

F1	F2	F3	F4	F5	F6
Select Device	Device Queue	Define Drives	Receive Mail	Send Mail	Network Control
Current selection is: 2nd FLOOR LASER					
----- SELECT A DEVICE					
→ 2nd FLOOR LASER					
JIM's PRINTER					
LQ 1500					
LQ 1500 COMP. PR.					
LQ 1500 LTR. QUAL.					
[Bypass network]					
[Device installation]					

To change printers, just hit one key to get this pull down menu. Then point the cursor at the setting you want and hit "enter".

But just because it's easy, don't think it's wimpy. Grapevine dispatches data just as fast as the IBM Token Ring. It handles over twice as many stations as Novell's own 68B network. And it operates across 4000 feet—four times as far as 3Com's + can go without repeaters.

But now there's a network that's so easy to use ANY salesman can demonstrate it. And any PC user can love it. Grapevine™

Grapevine gives you all the functionality of the leading LANs, but without the hassles: Control your printers, manage the print queue, pass files throughout the network, create, receive and send electronic mail.

To send or read your electronic mail, touch a single key. Voila! A pull-down menu shows your electronic mail activity. You don't have to interrupt your train of thought, exit to DOS, or any of that.

Just about any experienced PC user can install Grapevine. It comes with a simple to install hardware card and a single program disk. The whole program takes up less than 128K of RAM, requires no expensive file server, and is compatible with IBM's NetBIOS standard.

The cost? To connect eight PCs is under \$5,000 excluding cabling. Compare that with the TRUE cost of the other network leaders—\$12,950 for Token Ring, \$20,785 for Novell and \$14,535 for 3Com's +.

Still think Grapevine is too good to be true? We can prove it (and we're the only company that will) with an evaluation kit consisting of the network software, plus COMPLETE documentation, for just \$9.95. Or, for as little as \$195, we'll rent you a network for a month-long evaluation.\*

To order your own evaluation kit, or to find out the name of the authorized Grapevine dealer in your area, call (206) 487-1000. Dealer inquiries welcome.

*Grapevine*

You already know how to use it.

\*Prices quoted are for IBM Token Ring with AT file server (not recommended by retailers), Novell 68B file server and software, 3Com's + file server and software. Prices include separate software, and hardware necessary to match Grapevine's functionality and performance. \*\*Offer applies for a limited time only. Prices subject to change without notice. © 1987 Computer Pathways, Inc. Grapevine, CFI and Computer pathways, Inc. are trademarks of Computer Pathways, Inc. Computer Pathways, Inc., 1982 North Cook Parkway, Bothell, WA 98011

Call Computer Pathways at (206) 487-1000 to order a \$9.95 Evaluation Kit.



## • PURCHASING DECISIONS

## Users Cite Cost, Performance Benefits of Multiuser Systems

By Paula Stone

When first-time and experienced users select multiuser systems over network configurations, cost and performance are the two most cited reasons.

"If PCs are already in place and you don't need to buy more PCs, then a network can be cost-effective. But the multiuser system is a better value if one or two computers are in place and you need to buy more systems," said Jim Milburn, owner and president of Simple Solutions, in League City, Texas.

"Multiuser systems are gen-

erally faster than networks and are more flexible in that users can access files and records regardless of the number of people accessing the programs," Milburn said.

"We saved \$20,000 to \$30,000 on our initial investment going with a multiuser Tandy 6000 over a dedicated telephone answering service system with bundled hardware and software," said Paula Ford, co-owner of the Mail Depot answering service, in Virginia Beach, Virginia.

Identifying a number of aux-

iliary issues to the performance issue is John Payton, president of CMHC Systems Inc., in Columbus, Ohio, which supplies turnkey systems for the health care industry.

"Networked PCs can't provide the horsepower and throughput in some work environments," Payton said. "Where large number crunching is needed, you can't get the speed you can on a multiuser system. Putting more PCs in a network doesn't make them run any faster or give them more capability."

"Some networks let users share databases, but not in the same way as multiuser systems," Payton said.

Multiuser systems also offer central control of routine backup and true record locking during simultaneous update attempts. They are more cost-effective when there are large numbers of users, Payton added.

A network's overhead is too much," said Burt Reany, program analyst for Alltel, in Jamestown, New York. Alltel has over 300 users in four states using TI, Televideo, Sperry, and other terminals to access central databases in a Tandy 6000 with expanded memory in Jamestown.

"We chose a multiuser system because we wanted all our data concentrated in one place," Reany said.

"For a small business, an MS-DOS-based machine is fine. What we've learned is that as businesses grow and need to share data, disks, and resources, they typically need a good multiuser, multitasking Xenix-based system," said Jim Blair, program development, systems design, and operations manager at Winco, in Houston.

"We don't like the LAN configuration," said Steve Landess, MIS manager for the Dallas-based Ace Cash Express Inc. "It's redundant to string PCs. A multiuser CPU is more efficient," he added.

"Networks only work sporadically," said Joe Lowder, principal of Communication Architects, in Lynnwood, Washington. Unix-based operating systems have been around for years and work well, he said.

## Dest Facsimile Pac Bundles Software, EZ-Fax

By Mark Stephens

Dest Corp., manufacturer of PC and Macintosh scanners, announced last week the Facsimile Pac, which bundles the company's software with the EZ-Fax board from Gulfstream Microsystems Inc.

Dest recently purchased Gulfstream Microsystems Inc., a Boca Raton, Florida, company.

The Facsimile Pac offers CITT Group III facsimile compatibility, and also includes features such as automatic dialing and delayed transmission, store and forward transmission, and serial broadcasting, accord-

ing to Dest.

Sending, receiving, printing, and scanning documents can all be done in the background when using Facsimile Pac, according to Dest. All operations are controlled by menu commands and selections, with help windows available at any time, according to the company.

Richard Matthews, Dest's vice president of business development, said the Facsimile Pac is compatible with Dest's PC Scan or PC Scan Plus document scanners. This allows users to scan text or images into their PC, then transmit those images

to remote PCs or facsimile machines, he said.

The Facsimile Pac will be available for IBM PCs, PC XT's, PC AT's, and compatible computers at the end of August for \$1,495.

An optional Dest DES (Data Encryption Standard) encryption chip costs \$195, while an on-the-board Hayes-compatible 300/1,200 bps modem costs an additional \$129. Both chips are user-installable on the facsimile board, Dest said.

Dest Corp., 1201 Cadillac Court, Milpitas, CA 95035; (408) 946-7100.

## Keylogic Ships Batch Processing Program

By Mark Stephens

A batch processing program for local area networks running Novell's Network management system is being shipped by Keylogic Inc.

LAN Batch allows network users to send jobs to queues that have been established at other workstations on the network, keeping their own workstations free for use and allowing disk- or processor-intensive activities to take place on more powerful computers, according to Keylogic.

Typical applications for LAN Batch would include supporting dedicated servers for compilers, printers, and database engines.

According to Keylogic, commands are evoked the same as they would be from DOS, preceded by the command Batch. Users are able to control queue priority and can also schedule jobs to run at a future time. The batch server sends a completion or error message back to the user. Up to 50 jobs can be queued for processing, and each job can itself evoke multiple programs.

The cost for LAN Batch is \$125 for each server on the network.

Keylogic Inc., P.O. Box 13063, Research Triangle Park, NC 27709; (919) 544-6071.

## News Briefs

Continued From Page 11

from a price of \$498 to \$299, while VIS Combo, which includes both Watson and Watson VIS, went cut from a price of \$796 to \$399.

Natural Microsystems Corp., 8 Eire, Natick, MA 01760; (617) 655-0700.

## Corvus Announces Product Support for Net Software

Corvus Systems Inc. has announced Product Subscription Service, product support for its network software products, including PC/NOS and Constellation III.

The new service includes telephone support, automatic software updates, and a quarterly newsletter, Corvus said.

The company will give one year of free coverage to purchasers of its PC/NOS network operating system for IBM Personal Computers and for Constellation III. Corvus' network operating system for Apple II and Macintosh computers. Subsequent years of service will cost users \$199 per network.

Corvus Systems Inc., 160 Great Oaks Blvd., San Jose, CA 95131; (408) 281-4100.

## Digital Device Connects Five PCs to Single Printer

A printer-sharing device that connects up to five personal computers to a single printer is currently being shipped by Digital Projects Inc.

According to Digital Projects, the \$495 Print Director Junior has a Z-80 microprocessor, uses RS-232C serial connections, and features a 256K print buffer, expandable to 512K. Software included features pop-up windows that let users cancel jobs, vary job-end time-outs, and send customized printer setup commands from within applications.

Digital Projects Inc., 108 Water St., Watertown, MA 02172; (617) 924-1680.

## Switch Allows PCs to Use One Line for Voice, Data

A switch that allows a PC to use a single telephone line for both voice and data has been announced by TIE Communications Inc.

The Modem Voice Switch (MVS-1) eliminates the need for a dedicated telephone line for

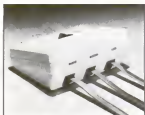
data communications in some cases, the company said.

Basically an A-B switch that manually toggles between voice and modem connections, the Modem Voice Switch is useful in cases where the need for modem communications is infrequent. The switch works on any line in a telephone system and is compatible with most electronic telephone systems, according to the company.

TIE Communications said that the Modem Voice Switch is not suited for unattended communications, which normally require a dedicated telephone line.

The MVS-1 costs \$40 and is available now.

TIE Communications Inc., 8 Progress Drive, Shelton, CT 06484; (203) 926-2000.



The Modem Voice Switch from TIE eliminates the need for a dedicated telephone line for data communications in some cases.

## Communications Program Includes Analysis of Data

By Jeff Angus

IQ Technologies Inc. released last week IQ Com-Link, a communications program that includes data analysis.

Other functions include file transfer, terminal emulation, and a context-sensitive on-line help system.

The product's file transfer service supports transfers between computers as well as to mass storage devices, floppy and hard disks, and tape systems.

IQ Com-Link can also emulate many terminals, including Wyse and Televideo models.

Data analysis features include information tracking for development, debugging, and

installation of systems. Emulating terminals is easy because the information tracker displays ASCII code, the company said. A control line status monitor for handshake lines displays information and allows parameter toggling. The product also indicates the serial protocol used and lets a user change it. A built-in Wordstar-compatible word processor allows file editing without leaving the program.

The company also provides a free demonstration disk.

IQ Technologies Inc., 11811 N.E. First St., #308, Bellevue, WA 98005; (206) 451-0232.

# Remote Input

By Robert Virkus

## IC Managers Can Develop Responsible Hackers Into Network Administrators

We all know the ideal network: The workgroup shares the maintenance; each user knows and understands the software and hardware; and the vendor replaces or fixes the hardware on-site so the network is virtually always up. Once it has been installed, you can move on and almost forget the network exists.

Much as you would like a LAN to run itself, it won't happen. Someone has to be responsible for its management. In many companies, you can't hire this person, and instead have to find someone within the organization to do it. An essential task is to identify that person and provide the training and motivation necessary so you can turn over the reins.

The minimum knowledge that any network manager must have includes:

- basic DOS commands;
- formatting floppy and hard disks;
- loading the network system software;
- performing maintenance, including backups and deletion of old files;
- running diagnostics and reporting results.

If the staff is not already using PCs, give them time to operate independently. It usually takes three months or so for cabling to be installed anyway. This time can be spent learning basic PC operation and using "sneaker net" — sharing data on disks. You want a natural progression to the electronic method of working.

With luck, one of the users will be a hacker. Properly developed, a conscientious, responsible hacker can be your best friend. But the hacker with a little knowledge can be a disaster. The hacker as manager must be able to work within the confines of the LAN and restrict hacking to areas that can't do damage.

The real benefit of hackers is they can understand a problem, describe it to you, and tell you what steps have been taken to correct it. Hackers are often more willing to spend time helping colleagues gain proficiency on the network. But guard against a hacker becoming so involved that other duties are neglected.

In looking for a manager, be open to people hanging around while the network is being set up. Is someone always there and asking questions? This might be the person. I ran into one individual who was so interested in the installation that his boss asked me what could be done to encourage him. I recommended buying him a PC and letting him take it home. The person got so involved with this fringe benefit that he became the computer guru for the entire staff.

An assigned person can be more difficult to work with. Usually it's an additional duty with no remuneration involved. Meet personally, resolutely head-on, let the individual know that even if the boss doesn't appreciate this person's increased worth, the experience will look good on a resume. When a boss asks how other groups operate, I reply that they conduct a salary review to upgrade job classification levels when the network is installed.

Someone assigned usually will require more training time than someone who volunteers; the motivation and interest

aren't there. In this case, documentation must be complete and up to date. The manager needs to be able to follow your step-by-step directions.

There are also the networks where everyone refuses to learn anything beyond the minimum. On the plus side, it means that they will probably never ask for enhancements, because they don't have the inclination to see what a network can do for them. The negative side is that you have to bail them out whenever trouble arises.

One question any firm using a network faces is who trains new people. Insist that after initial training, new staff is the responsibility of the workgroup.

When you are first approached by a group concerning network requirements, make sure their budget includes training. They must be aware from the start that training is a component of the network's success and that it will cost money. Negotiations with the potential vendor should include a discussion of training for network users as well as for the

network manager. It should be spelled out clearly how much training the vendor will be responsible for and how much you will be expected to pay for.

In all cases, you must have a current backup of every software configuration. Try to have every hardware configuration as well. Your goal is to troubleshoot any network without having to go on-site every time. It also makes it easier to add enhancements, either in response to requests or because you ran across an interesting new piece of software.

# 120 MB AIN'T MUCH.

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## STORAGE DIMENSIONS

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See us at the Javits Convention Center of New York, September 1-3, 1987. Booth #115.

Robert Virkus is the in-house microcomputer consultant for a major New York publisher. He can be reached at R.VIRKUS on Genie and BOBVIRKUS on Bix.

# Our New Personal Computer Is Built On More Than A Microchip.

## Mitsubishi introduces a compatible PC with something extra.

Of course, the new MP 286 industry standard from Mitsubishi has all the right features to meet the changing needs of a wide-range of business users. Designed with an emphasis on compatibility, functionality and configuration flexibility, the Mitsubishi MP 286 is the first in a series of personal computers ideally suited to large-volume resellers.

Yet with the new Mitsubishi MP 286, you can expect more than just an advanced computer system.

Much more.

## Reseller support services.

Mitsubishi personal computers are backed by an extensive product development and reseller support organization sensitive to your needs. Including marketing and promotional assistance as well as technical support. Plus immediate name recognition and a legendary reputation for product quality.

All this at a price to make you profitable.

## The ultimate in versatility and reliability.

Available with EGA, auto-tracking Diamond Scan™, or monochrome monitors, floppy or several fixed disk based configurations, the Mitsubishi

MP 286 provides everything you need for greater productivity. Today.

Suitable from single-user to multi-user system applications, the Mitsubishi MP 286 is quickly establishing new standards in versatility and reliability.

Custom developed LSI logic combined with surface mount technology have enabled us to produce a powerfully small desktop PC with a 15" x 15" footprint. Speeds from 6MHz to 8MHz/0wait. 640KB of standard system memory, expandable to 5.5MB. Six I/O slots also allow for expansion and custom configuring.

And with removable ROM BIOS, the system can be easily upgraded with future enhancements.

What's more, the new Mitsubishi MP 286 runs virtually every MS-DOS®

compatible software program. Additionally, the MP 286 can support most Xenix®-based applications.

All of which comes with a one-year warranty and supported by a national network of service centers.

## The value of a diamond.

Since 1983, Mitsubishi has been marketing high quality compatible personal computers in the U.S. Backed by people who really understand the importance of reliability and service.

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Mitsubishi Personal Computers. We've got the people and the products that can make a difference in your business. After all, you've got our name on it.

Mitsubishi Electronics America, Inc., Computer Systems Division, 991 Knox Street, Torrance, CA 90502. Call 1-800-556-1234, ext. 25. In California, 1-800-441-2345, ext. 25.



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Xenix is a registered trademark of Microsoft Corp.  
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## Continued on Page 19

## • USER PROFILE

# Periscope Gives Atlanta Group Easy Bug-Finder

By Jeff Angus

Wade Leverett is a software architect for a multinational firm's advanced education systems group in Atlanta. He examines every new debugging tool he finds, and recently he returned the dedicated hardware his group rented for \$1,000 a month in favor of a PC product line from The Periscope Company Inc.

Leverett said Periscope's three configurations suited the different needs of his 25-member group's system designers, programmers, and testers. The designers face some high-grade challenges in producing educational software that works with all the newest peripherals, including touch screens and video and optical disks.

The testers use Periscope I, a board and software combination. The program enables testers, who don't actually recode, to use a breakout switch to stop a program in progress for analysis, or even to recover from a hung system or program crash without having to reboot. The programmers use Level III for more advanced debugging, Leverett said.

Users can set up the product to provide information from data, stack, and register, and can show source and disassembled code. Periscope allows custom display formats, keystroke macros for frequently used commands, and — most importantly, said Leverett

— the ability to enhance Periscope products with extensible code. He said he believes the flexibility enables his staff to work more productively by choosing their own environment. And while it provides choices, the debugging work is a subset of MS-Debug commands, so programmers have a head start on the system. Work learned on lower level systems can be recycled for use of the higher end products, so the group saves money twice on retraining, he added.

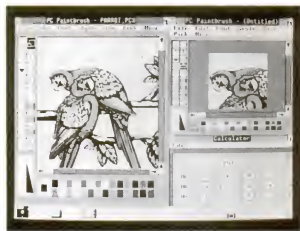
Leverett has found the products compatible with all his compilers and linkers, too. He still looks at every new debugging product, but for now, he said, "We haven't seen anything that comes close to Periscope."

Periscope I costs \$345, Periscope II costs \$175, and Periscope III is \$995 for an 8-MHz version and \$1,095 for a 10-MHz version.

The Periscope Company Inc., 14 Bonnie Lane, Atlanta, GA 30328; (404) 256-3860.



Periscope I, a board and software combination, lets testers use a breakout switch to stop a program in progress for analysis.



A user can now edit a file under a word processing program in one window and use PC Paintbrush in another, according to Zsoft.

# Zsoft Says Paintbrush To Run Under Windows

By Robert Snowden Jones

Zsoft Corp. announced last week a new version of its PC Paintbrush software that will run under Microsoft Corp.'s Windows.

The new program, PC Paintbrush for Windows, can be used to transfer graphics images to and from other Windows-compatible applications. It can also directly accept files created under PC- and MS-DOS versions of PC Paintbrush, PC Paintbrush Plus, and Publisher's Paintbrush, said Art Hyzer, Zsoft president.

Hyzer said the graphical Windows operating environ-

ment provides PC Paintbrush with greater flexibility. It now offers the capability to edit two different Paintbrush pictures simultaneously in separate windows, or to edit a file under a word processing program in one window and use PC Paintbrush in another, according to Hyzer.

It will sell for \$84, and registered users of PC Paintbrush can update to the Windows-compatible version for \$35, including shipping, Hyzer said.

Zsoft Corp., 1950 Spectrum Circle, Suite A-495, Marietta, GA 30067; (404) 980-1950.

# Firm Upgrades AT Disk Copy Program

By Mark Brownstein

A disk-copying program that makes exact copies of disks, including duplicating data location, has been updated to accommodate both the standard 360K floppy disks as well as high-density 1.2-megabyte drives of IBM PC ATs and compatible systems.

A new version of CPY-2AT to be announced this month by Microbridge Computers can not only make an exact copy of a 360K disk but also features a command that formats a 360K disk on a 1.2-megabyte AT drive, according to the developer.

Previous versions of CPY-2AT required the target disk to have a format written by a 360K disk drive. The products are intended for individual production of back-up copies, according to company policy.

The new release, Version 1.3, can copy from a standard 360K disk onto a 360K disk formatted by the new IVMAT-360 command, a Microbridge representative said. Also, disks formatted using IVMAT-360 are said to be more compatible with 360K drives than are 360K disks formatted with the DOS Format/4 command.

PC users have been able to make such exact copies using programs such as Central Point Software's Copy-II PC or Copywrite from Quaid Corp., which makes bit-for-bit copies. Users of AT compatibles have been stymied in their attempts to easily copy 360K disks with their 1.2-megabyte drives since the 1.2-megabyte drives have not been able to properly format the target disk.

CPY-2AT, scheduled to ship this month, will be priced at \$79.95. Registered users may upgrade to Version 1.3 for \$10, the company said.

Microbridge Computers, 655 Skyway, San Carlos, CA 94070; (415) 593-8777.

# Data Security Improved by Low-Cost Encryption Utilities

By Peggy Wott

Two data security products for PC-compatible files have been announced as low-cost utilities for use with virtually all data.

Datatrix Systems Inc. recently began shipping The Key, which meets the National Bureau of Standards Data Encryption Standard, and Generated Systems Inc. introduced DataLock, which includes file compression features.

DataLock encrypts text or binary files with user-defined combination codes and compresses them up to 50 percent. The company offers a \$25,000 reward to the first registered user who can, within 30 days of purchase, decode the sample

text file provided with the non-copy-protected, \$39.95 system. For \$59.95, The Key provides single-step encryption that results in a disguised file exactly the same length as the original file that can be transmitted, backed up, renamed, copied, and still decrypted. It was developed by Technical Communications Corp. of Concord, Massachusetts.

Generated Systems Inc., Building B, Suite 370, 301 N. Harrison St., Princeton, NJ 08540; (609) 737-8811.

Datatrix Systems Inc., 30 French Road, Buffalo, NY 14227; (800) 522-0026, (800) 626-6705 in NY.

# Generic Package Can Create 3-D Solid Models CAD Program Polygon-Based

By Eric Loch

Generic Software Inc. will ship this month a polygon-based CAD program that can create three-dimensional solid models, and an adjunct Rendering Module that enables users to shade or fill images.

The \$199.95 program, called Generic 3-D, features a three-dimensional cursor, construction planes, multiple windows, and automatic sectioning of objects, enabling the user to draw three-dimensional images with wireframe boundaries.

The program allows extrusion, which lets users move on-screen objects toward each other and then connect them; interface checking, a method of measuring the intersection of objects; and sweeping, the capability to revolve an object around a point to generate new objects, said Lisa Wickes, product manager for Generic 3-D.

The program can create im-

ages with perspective, duplicate objects and groups of objects, and present isometric as well as other points of view, Wickes said.

Also available is an add-on module that allows users to shade or fill in models, creating a more realistic three-dimensional view, according to Wickes.

The 3-D Rendering Module sells for \$149.95 and features hidden-line removal, image saving and retrieval, the capability to show a point light source, and the company's own interpretative language, called the Graphics Manipulation Language, which allows users to render objects with greater mathematical precision, Wickes said.

Both products were unveiled earlier this summer.

Generic Software Inc., 8763 148th Ave. N.E., Redmond, WA 98052; (206) 885-5307.

# Project 4.0 Resolves Schedule Conflicts

By Jeff Angus

An updated Microsoft Project, set to ship this month, now features extended report and scheduling aids that are not normally part of microcomputer implementations of project planning software.

Version 4.0 features Work Breakdown Structure (WBS) codes, resource ID codes, and a

custom report capability. The product is priced at \$495.

"With the custom report feature, you pick the exact data you want to display, and the exact format you want it shown in," said Jim Dunnagin, product manager. "With the addition of the new filtering feature, you display only the data matching criteria you specify. For example, if you want to display a custom report for one type of work, you can do it with Version 4.0."

Dunnagin said the filtering feature is usable in all areas of Microsoft Project 4.0. Microsoft added WBS coding and reporting for government contractors required to use that system. The product now has priority codes for each task, enabling more precise planning and resource leveling, another new feature of the program.

Resource leveling allows re-

source conflict resolution, Dunnagin added. The program, using priority codes as conflict resolution criteria, can reschedule by appropriating available unscheduled time blocks without extending the target finish date of the project, whenever such rescheduling is possible. Most scheduling software resolves conflicts by pushing the finish date, according to Dunnagin, but Microsoft Project designers considered that an unreasonable solution.

"People want help managing their projects, not just showing how they are laid out," he said.

Project 4.0 also prompts the planner when a resource (a person or critical equipment) is overscheduled. The program alerts the planner with a beep and a warning message.

Microsoft Corp., Box 9701 Redmond, WA 98073; (206) 882-8080.

## Utility Lets Clarion Read Dbase Files

Barrington Systems Inc. has announced a utility that permits sharing of data in Dbase III programs with the business application programs created with the company's Clarion development software.

The \$49.50 Database Three Language Extension Module (LEM) makes it possible for Clarion-created programs to write and read Dbase files without copying or converting them, said chairman Bruce Barrington.

The new LEM, to be available in September, provides a duplicate of file processing commands for Dbase data that parallels Clarion file processing commands, Barrington said. Record keys can be the same as those used in Dbase III programs or unique to the application created with Clarion. Indexes are maintained and updated by the Clarion program during processing.

Barrington Systems Inc., 150 Sample Road, Pompano Beach, FL 33064; (800) 354-5444, (305) 785-4555.

— Robert Snowdon Jones

## Autodesk Unveils Autocad AEC For Use by Mechanical Engineers

Autodesk Inc., developer of Autocad computer-aided design software, last week announced the release of Autocad AEC Mechanical, a separate but similar program designed specifically for mechanical engineers.

The new product, which also runs on the IBM PC and compatible systems, is a design aid intended for use in architectural, engineering, and construction mechanical systems, the company said. It is a stand-alone product but is compatible with Autocad and can import floor plans generated by Autocad from files that build mechanical systems drawings, according to

Autodesk.

Autocad AEC Mechanical also includes a template with standard industry symbols for construction equipment and features, as well as an interface to related third-party software, the company said.

The new product has a suggested retail price of \$500. For use with Autocad, Version 2.5 or later of that product is required, with the Advanced Drafting Extensions-3 enhancement.

Autodesk Inc., 2658 Bridgeway, Sausalito, CA 94965; (415) 332-2344.

— Peggy Watt

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### Individual Software Ships Directory Assistance Utility

Individual Software Inc. recently announced shipment of Directory Assistance, a memory-resident file and directory management program for PC compatibles.

The disk manager provides such standard file operations as copy, delete, rename, and sort, according to the developer. It also offers 300 context-sensitive on-line help screens, adjustable windows, the ability to move and rename directories and files, and editing as well as file-viewing capabilities.

Directory Assistance is also able to run in a non-memory-resident mode, according to the

company.

The \$39.95 utility also runs on the PS/2 line, and its package contains both 5¼- and 3½-inch disks with the software.

Individual Software Inc., 11641 Chess Drive, Foster City, CA 94404; (415) 341-6116.

### Tracer Spreadsheet Tool Adds HAL, Twin Support

An update of Tracer: The Spreadsheet Detective, from The Mt. Whitney Group, lets the spreadsheet auditing tool work with Lotus' HAL natural language interface to 1-2-3 and The Twin spreadsheet from Mosaic Software.

Later product versions will work with Lotus Symphony and Paperback Software's VP Planner, a company representative said.

The \$69.95 memory-resident utility is able to test spreadsheets created with Lotus 1-2-3 and SuperCalc from Computer Asso-

ciates.

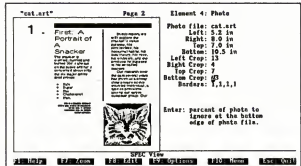
The Mt. Whitney Group, 11612 Knott Ave., Building G19, Garden Grove, CA 92641; (714) 891-6320.

### Micro-MRP to Bundle Solomon With MAX

Micro-MRP will bundle the Solomon III accounting package from TLB Inc. with its own MAX production manager MRP system as an option to Micro-MRP's manufacturing automation and financial control products.

Solomon III's integrated accounting package has 15 interactive modules intended for corporate use. Micro-MRP's financial and manufacturing control products are intended for medium size automated manufacturing operations.

The turnkey system combining MAX and Solomon will be available as an upgrade to customers of each product, and



Users can import, position, and crop graphics amid columns of text in Ashton-Tate's new Byline desktop publishing program.

## Early Beta User Praises Ashton-Tate's 'Byline' Also Notes Missing Features

By Mark Brownstein

Byline, the desktop publishing package announced earlier this month by Ashton-Tate, is perceived by an early user as a "desktop publishing system that stacks up pretty well to Xerox Ventura Publisher, Aldus Pagemaker, and Harvard Professional Publisher." Although the program has been in limited beta release, Leo Scanlon, a freelance writer who has been writing a book on the product for TAB Books, has been using it for a few months.

"I really do like Byline," Scanlon said. "It's easy to use, it doesn't require that you buy a mouse, and you don't have to buy a shell like Microsoft Windows or GEM to use it. It runs on a standard PC XT with a hard disk, a Hercules card, and a monochrome monitor." Specifications released by Ashton-Tate show that the product requires 384K and CGA, EGA, Hercules, or Hercules Plus graphics adapters.

Scanlon said he especially likes the text editor. "With a few more bells and whistles, it could be a full-fledged stand-alone word processor," he said. "It's not your standard text editor. It can do almost everything that I can do in Word Perfect."

In spite of its strong text editing capabilities, Scanlon also indicated the initial version lacks a number of features.

"I wish that it could handle [import] Dbase II and Dbase III data files, and not just Dbase III Plus," he said. He also said he'd like to see it import Word files. Currently, the program can import and export only Multimate, Wordstar, Word Perfect, Xywrite, and ASCII files.

"The user interface is okay," Scanlon said. "I think Ashton-Tate was trying for a Framework II type interface." Scanlon said he likes the \$295 price.

Ashton-Tate Corp., 20101 Hamilton Ave., Torrance, CA 90502; (213) 329-8000.

support is available from Micro-MRP. A new pop-up menu-based interface is intended to attract and train new and experienced users.

Micro-MRP Inc., Century Plaza 1, 1065 E. Hillside Blvd., Foster City, CA 94404; (415) 345-6000.

TLB Inc., 267 Great Valley Parkway, Malvern, PA 19355; (215) 644-3344.

### SSL Releases Graphics Library For Turbo C Use

TC Tools, a graphics library for use with Borland International's Turbo C Compiler, is available from SSL Software.

The utility supports all IBM graphics modes, including VGA, and an IBM or Microsoft-compatible mouse. It includes functions to write and read screen points, draw lines, set active palettes, read peripheral status, and more.

TC Tools costs \$27; source

code is available for \$15 more.

SSL Software, P.O. Box 1524, West Bethesda, MD 20817; (301) 585-1445.

### Micropro Announces Fall Update For CP/M Wordstar

Micropro International announced September shipment of an update of Wordstar for CP/M systems.

Wordstar CP/M Release 4.0 has more than 100 new features, including macros, an "undo" command, and laser printer support, the company said. The product costs \$295, including 90-day telephone support.

CP/M Wordstar users can get one update per registration number for \$89 plus tax and \$5 for shipping. Volume pricing is available for updates through user groups.

Micropro International, 33 San Pablo Ave., San Rafael, CA 94903; (800) 227-5609, (415) 499-1200.





MS-DCG is a trademark of Microsoft Corporation.

**WPC** includes 16-bit 80387 2.4MHz or i486 computer with 512K memory (expandable to 768K) and AT-style keyboard, clock/timer, two 380V floppy drives, power cord, built-in 12" monochrome monitor with snap-on cover, MS-COS 2.1 PC, PC-Pak Care and help manuals. Upgrade kit (\$299 reference price) includes hard processor, data base and communications applications software, CGA double scan graphics, 1M 16040 + 400 graphics, 16 shades of gray PC-style mouse and serial ports, voice port for external color monitor. Optional 20MB hard disk and 1200D baud modem. All in a compact 13.5" x 14.5" x 16". Specifications subject to change without notice.

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### Company Shows Version Of New Word Processor

At Macworld Expo, Ann Arbor Software Inc. demonstrated a beta version of its long-awaited Fullwrite Professional word processor and promised that production versions of the program will ship within 30 days.

The program, which combines high-end word processing with many desktop publishing features, will initially be sold at an introductory price of \$295, the company also disclosed.

Combined together in a WYSIWYG environment, the program offers such word processing features as footnotes and endnotes, tables of contents and indexes, generation, spell checking and thesaurus, posted notes, hyphenation, multiple documents, and a powerful outline.

Among the desktop publishing features exhibited were automatic text wraps around irregular objects, kerning, leading, and the capability to place separately formatted documents with a main document, allowing multiple column widths to be mixed on a single page.

### Supermac Demonstrates 24-Bit Color Video Cards

Supermac Technologies of Mountain View, California, showed at Macworld Expo what it described as the first 24-bit color video card, allowing users to access the 16.8 million available colors on the Mac II. However, the company declined to project a release date or the price of the product.

Supermac's parent company, Scientific MicroSystems, also of Mountain View, announced it intends to acquire Leveo Inc. of San Diego, maker of the Prodigy line of Mac accelerator cards. Leveo also offers Mac memory upgrades. "For the last two years Supermac and Leveo have been competing in the Mac market," said Steve Edelman, founder of Supermac and now a vice president at SMS.

### Firm Presents Enhanced Insight Module Versions

Layered Software demonstrated at Macworld Expo recently enhanced versions of Insight's three modules, as well as a new module for inventory control.

Each \$595 module offers AppleShare compatibility and has file export compatibility.

Continued on Page 22

## Apple Adds New Machine To Printer Line

By Laurie Flynn

BOSTON — Adding a new member to its line of output devices, Apple Computer last week unveiled a high-resolution, wide-carriage printer at the Macworld Expo here.

The Imagewriter LQ is a 15-inch-wide dot-matrix printer with the capability to print text and graphics at 216 by 216 dots per inch. The price of the printer, expected in the fourth quarter, is \$1,399.

The printer's resolution, near that of the Laserwriter, the

company said. Intended for small and medium-size businesses and schools, the Imagewriter LQ can be shared on an AppleLink network and is compatible with both the Mac line and the Apple II. Apple officials said the printer is a response to the demand in those markets for versatile paper handling, such as the capability to print labels, envelopes, and forms.

The Imagewriter LQ uses a 27-pin printhead to print in draft, near letter-quality, and letter-quality modes. It includes automatic page reduction and a selection of Mac fonts.

Apple will offer a variety of options with the printer, including a cut-sheet feeder for \$299 and an envelope feeder for \$49. A package of six color ribbons will be priced at \$150. AppleLink support is also an option.

## Nashoba Gets Market Rights To Filemaker Plus Program

By Laurie Flynn

REDMOND, WA — Six weeks after acquiring Forethought Inc., Microsoft said last week that it will not get the marketing rights to the Filemaker Plus file manager program. Instead, the rights to the program return to Nashoba, the Concord, Massachusetts, developer of the program, which will market it starting at the end of October.

The licensing agreement between Forethought and Nashoba was automatically voided when Microsoft acquired Forethought, according to Rob Campbell, former president of Forethought and now a consultant to Microsoft.

"Microsoft made us a fair offer, but we felt that as a fair offer, but we felt that at this point in our growth, it didn't seem to make much sense," according to Nashoba product manager Elisabeth Bayle. "It's the natural evolution of our company to bring such things

in-house."

Currently, there are over 20,000 Filemaker Plus users, according to Campbell. "We plan to put out letters to our registered owners," he said. "The point is to make it a smooth transition."

Forethought's support lines for Filemaker Plus will shut down August 31, according to Campbell.

Nashoba, publisher of the Nutshell database for the PC, hopes to have enough inventory of the Forethought product to last through October. However, Bayle concedes there could be a lapse in the product's availability. "There may be a gap, which we will have to cover for as best we can," she said. "But we're training our support staff right now." Bayle added that the company is currently working on enhancements to the product but would not give details.

## Apple Shows Promised Communications Wares

### Ethernet Card for Mac II Stars

By Laurie Flynn

BOSTON — Apple Computer showed several long-promised communications products last week, including an Ethernet adapter card for the Mac II that will be available in the fourth quarter.

Other products that were shown include AppleShare PC, which enables IBM PC users on an AppleLink network to share the resources of an AppleShare file server, and the Apple File Exchange, which facilitates the translation of formats between diverse applications. All three of the products were described at the Seybold Desktop Communications conference in January.

The \$699 EtherTalk card for the Macintosh II transmits AppleTalk protocols over a 10-megabit-per-second coaxial network, according to Apple vice president Jean Louis Gasee. An optional transceiver enables users of the Macintosh II to run thin Ethernet cabling.

An Ethernet connection was

among the missing links in the Macintosh II's positioning as an engineering machine. "EtherTalk legitimizes the Macintosh II as a powerful workstation," according to Apple chairman John Sculley.

AppleShare PC is software that enables IBM PC users on an AppleLink network to access files on an AppleShare file server through a memory-resident menu. However, AppleShare PC runs as a workstation program only. The price of the program was not disclosed.

Lastly, Apple is positioning the AppleShare File Exchange as a standard architecture to which developers of translation programs should write. The program translates files from one format to another and includes three common translators. The program will be included with Apple's 3½-inch PC Drive Cards, and also with the Mac system software upon its release in the third quarter.

## Apple Targets Fax Users With External Modem

By Edward Warner

BOSTON — Targeting what it called a worldwide network of 2 million facsimile machines, Apple Computer Inc. last week announced a \$699 external modem for the Macintosh that it said can communicate with Group 2 and Group 3 facsimile machines.

The Applefax Modem also allows users to send files from

one Applefax Modem-equipped Macintosh to another at up to 9,600 bps. Apple said. Included is Applefax Resource software, which converts Macintosh files into facsimile format, and the Applefax Application Program, which permits users to send and receive faxes and Macintosh files. Apple explained.

The latter program, Apple added, also supports multiple file transmission, distribution lists, an address book and activity report, and timed transmissions in which faxes are sent and received while the Macintosh operates unattended.

Faxes can also be manipulated by other Macintosh software, such as Adobe Systems Inc.'s Illustrator, Apple said.

The modem, available in the fourth quarter, comes with the same LQ fonts as the Apple Imagewriter LQ printer in order to improve the quality of facsimiles, Apple said.

Reacting to the announcement, Jan L. Ozer, president of Asher Technologies Inc. of Roswell, Georgia, said, "We are pleased to see that Apple is validating the market with this entry." Earlier this year, Asher introduced the JT Fax Macintosh, a \$695 external facsimile modem that it plans to ship in September.

## Publishing Products Debut at Macworld

By Eric Lach

BOSTON — Last week's Macworld Expo here produced a number of notable publishing and graphics products.

Letraset's Paramus, New Jersey, unveiled a major update of Ready-Set-Go publishing software and a new graphics package that manipulates grayscale data from scanners.

Version 4.0 of Ready-Set-Go adds more than 80 features, including arbitrary text run-around, interactive facing pages, style sheets, glossaries, and an improved spelling dictionary. The price is \$495, with a \$75 upgrade for registered users.

Letraset's new scanned image enhancement program, called

Image Studio, gives users a sophisticated set of tools for changing gray-level information generated by high-resolution scanners. The product is scheduled to ship in the third quarter at a price of \$495.

Quark Inc. announced Version 1.1 of its Xpress desktop publishing software, adding TIFF format support and the capability to import documents from Microsoft Works and T/Maker's Write Now. Other new features include the capability to save text only from a document, leading, and a find/change function.

Addison-Wesley Publishing Co. of Reading, Massachusetts,

announced shipment of typesetting software based on the Tex typesetting language. Textures, priced at \$495, handles mathematical and scientific symbols and is compatible with Tex files on mainframes.

Meta Software Corp. of Cambridge, Massachusetts, also announced a major update of its Design program for doing business and presentation graphics. Called Version 2.0, the program adds support for the Macintosh II, large-screen displays, and PICT format output to desktop publishing programs. Also included is an Undo command and the capability to create diagrams of up to 9,999 pages.

## Excel Add-On Programs Announced at Macworld

By Laurie Flynn

BOSTON — A flurry of new add-on programs for Microsoft Excel were announced last week at the Macworld Expo, and the company announced a special promotional rebate program for Mac Write users who switch to Microsoft Word.

Turner Hall Publishing, acquired recently by Symantec, announced that it will offer a version of its SQZ data compression program for Excel. Mac SQZ is capable of com-

pressing Excel files 95 percent, the company said. The program is the first in a line of Excel add-ons Turner Hall plans to develop, according to Gordon Eubanks, president of Symantec. Mac SQZ will cost \$79.95.

Heiser Software of Boston announced it will offer an additional 100 add-on programs for Excel, including several vertical market programs for the financial services industry.

"Independent software ven-

dor support is incredibly important to developing Microsoft Excel as the spreadsheet standard," said Microsoft president Jon Shirley.

Microsoft also announced a co-marketing agreement with Presentation Technologies of Sunnyvale, California, and a development agreement with Layered Software of Boston. The latter agreement will result in data exchange capability between Layered's accounting program, Insight, and Microsoft Excel, Shirley said.

As an incentive to users to migrate from Mac Write to Microsoft Word, Microsoft is offering a \$75 rebate to customers of the company's Macintosh word processor.

## Abaton Ready to Pointing Device

By Eric Lach

PLEASANTON, CA — Abaton Technologies Corp. said last week that it is readying for market a new type of pointing device that uses a sophisticated form of "track ball" technology as well as a version of its C-Scan image processing software that allows its scanner line to work with MS-DOS machines.

Scheduled for formal introduction at the Seybold Conference on Desktop Publishing in September, both products were shown privately at last week's Macworld Expo in Boston.

The new Mac pointing device, called Powertouch, uses Apple's new desktop bus, a track ball, and Abaton's proprietary "optical leveling technique" to give Mac users a 200-tracks-per-inch pointing device, said John Noellert, Abaton's director of product development. Most mice offer only 90 tracks per inch, he said.

The \$159 device comes with a regular mouse button, as well as a second shift-lock button.

The PC version of C-Scan, called Pictescan, will offer essentially the same features as Version 1.5 for the Mac without any of the gray-scale capability added to Version 1.6, which was released at Macworld.

The Windows-based program, which will be available next month, allows users to fully edit scanned images at 300-dpi resolution and with 16 half-tone levels using an extensive kit of paint and draw tools, Noellert said. However, unlike the Mac version, which has separate controls for adjusting both brightness and contrast, the PC version's contrast control is automated, readjusting each time the user changes the brightness, he said.

An Abaton scanner equipped with PC scanning software will sell for the same price as the equivalent scanner with Mac software, Noellert said. For \$695, users can upgrade the current scanners to work with the opposite hardware platform,

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bility with Microsoft Excel, Layered said. All will be available this month except Inventory Control, which will ship in January 1988.

Multisuser versions of those modules, priced at \$895 each, will be unveiled at the show and ship in November. Layered said they will also unveil two low-end accounting packages, including the \$595 All-In-One, which the company said will ship in November and features basic versions of the three initial Insight modules, plus payroll, job costing, and inventory. The second, the \$249 Insight One Write, is designed for small organizations and will be available in September, Layered added.

Layered Software, 84 Merimac St., Natick, MA 02114; (617) 423-9011.

### Expansion Boxes Give SE Up to 4 SE Slots, 8 Mac Slots

External expansion boxes announced for the Macintosh SE at Macworld Expo give the SE up to four SE card slots or eight Macintosh II card slots.

Expansion from Second Wave Inc. of Austin, Texas, includes an interface card that fits in the SE internal expansion slot, cables connecting to an expansion chassis with four SE card slots, a 60-watt power supply, and cooling fan. Price is \$995.

Expense II accepts up to eight Nubus Mac II-compatible cards and includes an interface card that converts SE bus signals to Nubus signals. The expansion chassis is the same size as that of the Mac II. It has a 130-watt power supply and sells for \$1,195.

### Board Lets Mac SE Operate Twice as Fast as Mac II

The Macintosh SE can operate twice as fast as the Macintosh II with a new 68020 accelerator board running at 25 MHz, according to Mac Peak Systems

of Austin, Texas.

The Orion 25 accelerator achieves its performance with the help of a dual-port cache, high-speed static RAM for uploading the Macintosh ROM, and 85-nanosecond RAM. The current Orion accelerator for the SE operates at 16 MHz, makes the SE just slightly faster than a Mac II, and sells for \$1,495.

The estimated price of the Orion 25 is \$3,995, and it will ship in the first quarter of 1988. Mac Peak's new hardware print server/pooler, Plus Spool, talks directly to Apple's Laserwriter, substantially increasing speed over all software spoolers, Mac Peak officials said. Plus Spool connects to AppleLink between the Macintosh and the Laserwriter.

Plus Spool is available for \$895 in stand-alone form or as a \$695 option to Mac Peak's Ciera hard disks, available with 20, 30, 50, or 80 megabytes.

Mac Peak Systems, 1201 Spyglass, Austin, TX 78746; (512) 327-3211.

### Users Able to Implement Routine Set in Lightspeed

Think Technologies of Lexington, Massachusetts, introduced at Macworld its \$75 Caps Prime: The Editor Construction Kit. The product is a set of routines that users can implement in an application being created with Think's Lightspeed C or Lightspeed Pascal. The company also announced that the enhanced version of Lightspeed Pascal will ship this week priced at \$125.

The company also said it will introduce at the show HFS Navigator, a \$59.95 utility that permits users to delete, create, and rename files at the Save and Open commands.

### Cognition to Release New Version of Its Mac Smarts

Cognition Technology will unveil Version 2.0 of its Mac Smarts expert system tool for the Macintosh, adding hypertext and example-based rules.

With the hypertext feature, users can gain information about an item by clicking on a

section of an image or document, which takes the user to another document or knowledge base with further explanation.

Mac Smarts, Version 2.0 costs \$149.95, including five sample knowledge bases.

Cognition Technology Corp., 55 Wheeler St., Cambridge, MA 02138; (617) 492-0246.

### Slidewriter Uses Mac Video Output to Make Color Slide

A film recorder that produces color 35mm slides from a black-and-white Mac Plus, Mac SE, or Mac II will be released next month by Matrix Instruments.

The Slidewriter connects to the SCSI port of the Macintosh and produces a color 35mm slide from the Macintosh's video output. Priced at \$11,795, the recorder is a stand-alone unit that features user-definable color tables and a resolution of 2,048 or 4,096 lines per slide. The company claims the 4,096-line slides are equal to the resolution of 35mm film.

The product comes with a utility software package featuring interactive pull-down menus, allowing the user to select how the slides are prepared, specify the scaling factor, spool output, and map black-and-white patterns into color images, the company said.

The Slidewriter is compatible with the PICT format used by Mac Paint, Powerpaint, Cricket Draw, Cricket Graph, and other Macintosh graphic programs. The product can produce up to 30,400-line slides per hour.

Matrix Instruments Inc., 1 Ramland Road, Orangeburg, NY 10962; (914) 365-0190.

### E-Machines Ships 17-Inch Mac Monochrome Display

E-Machines has begun shipping The Big Picture 17-inch monochrome display, a square-shaped monitor for the Mac II.

Priced at \$1,995, the package includes a 1,024-by-808 display, a video controller card, and cables.

E-Machines Inc., 7945 S.W. Mohawk St., Tualatin, OR 97062; (503) 692-6656.

## Monochrome Monitor Offers Flicker-Free, 80-DPI Display

BOSTON — A 20.5-inch monochrome monitor with 1,024-by-1,024 pixel resolution debuted last week at Macworld Expo. The Stretch Screen 20.5 offers flicker-free 80-dpi display, said its vendor, Network Specialties Inc. of San Francisco.

Another vendor, Mac Peak Systems of Austin, Texas, announced at the show an adapter board that permits a variety of large-screen monitors to be used with its Orion Macintosh accelerator board. Mac Peak said the Galaxy LS board plugs into the Orion board and supports both single-page and two-page monitors.

The \$495 Galaxy LS is available now, Mac Peak said.

Network Specialties also said it is marketing a \$995 version of the Xerox Corp. Full Page Display configured for the Macintosh. Called the Hi-Top, the monitor can display an 8.5-by-11-inch image, has 720-by-900 pixel resolution, and is available immediately, the vendor said.

Network Specialties Inc., 1485 Bayshore Blvd., San Francisco, CA 94124; (415) 467-8411.

Mac Peak Systems, 1201 Spyglass, Austin, TX 78746; (512) 327-3211.

— Edward Warner

## Firm Introduces Array of Mac Screen Enlargement Products

Macintosh screen enlargement was the focus of a lineup of products presented by Network Specialties Inc. at last week's Macworld Expo.

The introduction included a screen projection device designed especially for group viewing environments. Called Stretch Projector, the product is a combination hardware and software system that enables the Mac to project screen displays over any standard overhead projector, according to Network Specialties.

The package consists of a clip-on screen interface card,

proprietary LCD overhead screen plate, cables, and software. The Stretch Projector features a proprietary "chip on glass" technology, which allows the design of the LCD plate to be light and thin, making it suitable for carrying in a briefcase, the company said.

The Stretch Projector is scheduled to ship at the end of August and will retail for \$1,799, the company said.

Network Specialties Inc., 1485 Bayshore Blvd., San Francisco, CA 94124; (415) 467-8411.

— Renee Mathews



# Save valuable time every day with the **RANDOM** information processor



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## News Briefs

### Add-in Board Lets ATs Perform Multitasking

An 80386-based add-in board that enables IBM PC ATs and compatibles to perform multitasking duties has been announced by Megahertz Corp.

The 386 Ultratask board includes an Intel 80386 processor, supports components and circuit board for adapting the board to an 80286 socket, and includes Desview, Version 2.0 multitasking software from Quarterdeck Office Systems, the company said.

According to company spokesman Paul Spafford, the 386 Ultratask will increase the speed of an AT by up to 50 percent. The 386 Ultratask is scheduled to ship October 15 and will retail for \$899.95. The company covers the board with a two-year warranty.

Megahertz Corp., 2681 Parley's Way, Salt Lake City, UT, 84109; (800) 37-TURBO; (801) 485-8857 in UT.

### Quad EGA Prosync Board Now VGA Compatible

Quadram Corp. has announced a \$10 upgrade kit that makes the company's Quad EGA Prosync graphics board compatible with software that uses the Video Graphics Array standard.

The kit comes with a BIOS upgrade and software drivers for Word Perfect 4.2 and later, Wordstar 3.0 and later, Autocad 2.5 and later, GEM 2.1, and Lotus 1-2-3 graphics and text. The kit also includes a utility that permits the user to select from a menu the desired display mode for the software applications.

Quadram Corp., 1 Quad Way, Norcross, GA 30093; (404) 564-5567.

### Tandy Adds 2 Printers To Its Dot-Matrix Line

Tandy has announced two additions to its dot-matrix printer line. The DMP 2120 is a 24-pin dot-matrix printer that will sell for \$1,599. It prints 240 characters per second in its fastest mode and features a push-type tractor feed that lets forms and sheets be detached without wasting paper.

The company also introduced the DMP 440, a wide-carriage, nine-pin, 300-cps dot-matrix printer that sells for \$699.

Tandy Corp., 1800 One Tandy Center, Fort Worth, TX 76102; (817) 390-3700.



The Gridcase EXP laptop computer weighs 15 pounds and contains two full-size, XT-compatible expansion card slots.

## 15-Pound Gridcase EXP Contains Expansion Slots

By Renee Mathews

Adding to its growing family of laptop computers, Grid Systems Corp. has announced Gridcase EXP, a 15-pound laptop with expansion capabilities.

The design of the Gridcase EXP incorporates two full-size XT-compatible expansion slots. This feature provides Gridcase

users with the capability to implement applications that require the use of add-in boards, such as communications and storage expansion.

The length of computer time when powered by the system's internal battery depends on the power consumption requirements of the add-in cards. Without the use of expansion boards, the system will run on its power supply for four to six hours, the company said.

The \$4,640 Gridcase EXP is based on an 80386 microprocessor on a 16-bit bus running at 4.77 MHz.

The base configuration of the laptop includes 640K of RAM, a 3½-inch floppy disk drive, RS-232 and Centronics ports, RGB output, and a superluminous LCD display. An optional 20-megabyte internal hard disk is available for \$1,175, as well as a 300/1,200/2,400-bps modem for \$595, a gas plasma display for \$595, and 1 megabyte of EMS RAM for \$395.

The Gridcase EXP is available immediately from dealers and distributors, the company said.

Grid Systems Corp., 4721 Lakeview Blvd., Fremont, CA 94537; (800) 222-GRID.

## New RLL Drive More Reliable, Adaptec Says

By Mark Brownstein

A new RLL hard disk controller that supports DOS 3.3 and can work with more hard drives than previous controllers has been announced by Adaptec Inc.

Like the former Adaptec RLL controller, Adaptec's ACB-2072 card increases hard disk capacity by 50 percent. The new card, however, is said to be more reliable than earlier RLL controller cards, allowing Adaptec to cover it with a lifetime warranty.

The Adaptec controller gains its increased reliability through data separator chips, which Adaptec said provide more tolerance for hard disk errors. This means the board may qualify a drive as RLL compatible that previously wouldn't meet minimum compatibility specs with other RLL controller cards, said a company spokesman.

The board is half-card sized and can be installed in portable computers with half-card-size slots. It is designed for use in the IBM PC 30 as well as the IBM PC, XT, and compatible systems. Shipping now, the board is available in OEM quantities for \$85.

Adaptec Inc., 580 Cottonwood Drive, Milpitas, CA 95035; (408) 432-8600.

## 300-DPI, 8-PPM Printer Employs LCS Technology

By Eric Lach

Data Technology Corp. last week unveiled a 300-dot-per-inch, 8-page-per-minute printer that uses liquid-crystal shutter (LCS) technology and lists for \$2,495.

Called the Crystalprint III, the nonimpact printer is aimed at business and desktop publishing users who want better print quality and higher mechanical reliability than is offered by current laser printers, according to Michael Sugihara, the company's director of strategic planning.

Laser scanning systems, which emit light from a single fixed point, exhibit some distortion at the extremes of the optical path, while fixed systems can have difficulties maintaining a uniform distance from each light source and the drum, Sugihara said.

The Data Technology printer, which uses a Casio LCS engine, keeps consistent pixel sizes as well as the distance between light sources and drum, producing undistorted fully

formed images, according to Sugihara.

While offering the same speed as laser printers, the LCS printer also is more reliable because without the laser printer's rotating mirrors and lenses, there are fewer moving parts to fail, Sugihara said.

The Crystalprint's controller, which is located in the printer, also offers a full emulation of the Hewlett-Packard Laserjet Plus, Sugihara said.

Other features include three ROM-resident and cartridge-based fonts from Bitstream; downloadable fonts, including HP-compatible fonts; and 1.5 megabytes of memory for producing high-resolution bit-mapped graphics.

Also available as an option for \$195 each are coin-man and font emulation cartridges for the Epson FX-85, Diablo 630, HPGL, and IBM Printer, Sugihara said.

Data Technology Corp., 2551 Walsh Ave., Santa Clara, CA 95051; (408) 722-8899.

## Everex Systems Ships 60MB, 125MB Streaming Tape Drives

By Mark Brownstein

Everex Systems Inc. is now shipping 60- and 125-megabyte streaming tape subsystems for Micro Channel bus computers.

The Excel Stream 60 is an external streaming tape subsystem that stores up to 60 megabytes of data on a tape cartridge or cassette. The Excel Stream 125 is an external streaming tape subsystem that can store up to 125 megabytes on a tape cartridge. The 125 unit can also read and write 60-megabyte tape cartridges.

The tape format in the PS/2 version of the drives is identical to that used by the IBM PC

version. Thus, tapes are completely interchangeable between the two subsystems.

Further, the IBM PC version and the PS/2 version of the streaming tape drives is the interface connection to the computer. A special Micro Channel bus adapter is used in the PS/2 version of the subsystem.

"You can plug the connector from a PS/2 into a PC version of the drive, and it will work," according to Vik Vakil, marketing director at Everex. "You can use one drive and buy an interface for each computer in a department, and use the single drive on all the computers," Vakil said.

The streaming tape subsystems are currently being sold as complete subsystems, and Vakil said he doesn't know if the marketing department at Everex plans to sell just the interface to companies that already have the tape drives.

The cartridge version of the Excel Stream 60 has a list price of \$1,595. A version that uses data cassettes sells for \$1,395. The Excel Stream 125 has a list price of \$1,895. All systems include necessary cables and a free tape cartridge or cassette, the company said.

Everex Systems Inc., 48431 Milmont Drive, Fremont, CA 94538; (415) 498-1111.

## Board Brings 80386 Software Capabilities to IBM PS/2s, ATs

An upgrade card to increase performance levels of the IBM PS/2 Models 50 and 60, IBM ATs, and compatibles has been announced by Application Engineering and Associates.

The 386 Eagle is a migration product that provides 80386 software capabilities while keeping existing systems on-line, the company said.

The board, based on an 80386 chip, runs at 16 MHz and includes an Intel 80384 clocking chip for timing control and

512K of memory.

The board does not plug into the Micro Channel bus but is attached to the G35 connector. It side-saddles the floppy and hard disk controller, allowing the board to be PC bus independent, the company said.

The 386 Eagle will be available in October and cost \$1,695. Application Engineering and Associates Inc., 3420 E. Shea Blvd., Suite 227, Phoenix, AZ 85028; (602) 996-7762.

— Renee Mathews



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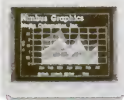
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## Boards Add Memory to HP Series II Printer

A series of memory expansion boards designed to provide additional memory for the Hewlett-Packard Series II Laser Printer has been released by Pacific Data Products Inc.

The "1-2-4" board family provides the Series II with the extra memory necessary for using such applications as desktop publishing and computer-aided design and drafting, according to the company.

The 1-2-4 boards are compatible with the Series II expansion slot and may be configured in 1, 2, or 4 megabytes of memory. The boards accept either 256K or 1-megabit memory chips and may be upgraded at any time, Pacific Data Products said.

The company also offers the boards without memory or in a fixed 1-megabyte size. They are backed by a one-year warranty and are available immediately, the company said.

Prices for the 1-2-4 boards range from



The "1-2-4" board family can be configured in 1, 2, or 4 megabytes of memory.

\$295 to \$1,595, depending on the configuration.

Pacific Data Products Inc., 8525 Arjons Drive, Suite M, San Diego, CA 92126; (619) 549-0922.

— Renee Mathews

## IQ Technologies Offers Four Smart Converters That Include Buffering

IQ Technologies Inc., a company best known for its Smart Cable — an intelligent serial connector that decodes otherwise incompatible pin settings — is applying that technology to a line of seven new Smart Converters and Buffers.

The offerings include four Universal converters with buffer sizes from 256K (\$399) to 1 megabyte (\$945). These models allow communication from either a serial or parallel port to a serial or parallel device, in either direction, and include two DB25 serial ports and two Centronics parallel ports. The units support bps rates of 75 to 38,400 and switch-selectable parity, as well as paral-

lel transmission speeds of up to 4,000 characters per second. They support making up to 250 copies of the same transmission.

IQ is also offering a pair of bi-directional converters with a buffer but without supporting parallel-to-parallel or serial-to-serial communication. The model with a 256K buffer costs \$299, while the 512K buffer version is \$399. The firm sells a similar model with no buffer for \$119.

IQ Technologies Inc., 11811 N.E. First St., Bellevue, WA 98005; (206) 451-0232.

— Jeff Angus

## Honeywell Printer Gets Better Paper Handling Features

Improvements in paper handling and printing were added to the Honeywell Bull Italia 4/66 color dot-matrix printer in a recent enhancement, its vendor said.

Enhancements include support for bar code printing, automatic front loading of single sheets, and pull tractors for handling thick forms and eliminating tear-off on fanfold stationary, the vendor reported. Single-sheet capability allows paper to be loaded into the printer from the front without the use of the "form-feed" or "on-line" buttons, Honeywell Bull Italia explained.

A second paper bin, a new option priced at \$333, can be positioned below the first paper bin to double the printer's capacity.

The printer features seven bar code algorithms resident in a firmware cartridge, which the vendor said can be used with an existing optical character reader cartridge for applications in industry and process automation.

The printer operates at 480 characters per second in draft mode, 75 cps in letter-quality mode, and is available now, Honeywell Bull Italia added.

Honeywell Bull Italia, 120 Howard St., Suite 800, San Francisco, CA 94105; (415) 974-4340.

— Edward Warner



The enhanced Honeywell Bull Italia printer includes support for bar code printing as well as a single-sheet capability.

# New FoxBASE+ 2.00

**Blazing Speed  
New Features  
Easier to Use**

### Complete dBASE III PLUS Replacement... And Much More

Don't change your programs, databases, screens, or reports! FoxBASE+ makes your dBASE applications run like lightning *without changing one line*. And you can still use the best parts of dBASE—great interactive features like EDIT and BROWSE *plus* the full power of the "dot-prompt." Use FoxBASE+ in exactly the same, familiar, user-friendly way you use dBASE.

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For ultimate speed now, FoxBASE+/386 runs about 50% faster than standard FoxBASE+ 2.00—over 10 times faster in some operations. It takes full advantage of protected mode and the giant memory capacity of the 80386 *chip today*... yet runs under standard MS-DOS.

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Best of all, single-user MS-DOS FoxBASE+ 2.00 costs just \$395 and FoxBASE+/386 2.00 just \$595. Multi-user versions are also available.\* And with our Royalty-Free Runtime you can distribute your FoxBASE+ applications freely and never pay another dime.

FoxBASE+ runs on the new IBM Personal System/2 and 3.5" diskettes are available at no additional cost.

So call (419) 874-0162 and ask for the details about FoxBASE+ 2.00 and our money-back guarantee. After all...

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\* Using the suite of 48 comprehensive benchmarks published in Data Base Advisor, March 1987.

\*\* Multi-User FoxBASE+ 2.00 for MS-DOS costs \$595. Multi-User XENIX version available at \$795.

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# Board Lets Amiga Capture, Transfer Images Across Network

By Mark Brownstein

An add-in board for the Commodore Amiga is making it possible for one organization to combine the graphics capabilities of the Commodore system with IBM PC applications and add-on hardware.

The A2088D Bridgeboard, an add-in board offered by

Commodore for the Amiga, allows the University of Lowell (Massachusetts) to import scanned images into a Commodore Amiga 2000 computer and to transfer images across a network. The Bridgeboard operates as a dedicated PC-compatible and can even accept PC bus

expansion cards.

As a multitasking system, the Amiga allows the PC to function as a task in its own window. "For some of the imaging we do," says Richard Miner, research manager at the University of Lowell's Center for Productivity Enhancement, "we are

using both the Amiga and the PC [with the bridge card].

"There are a lot of boards for imaging available in the PC environment," but not as many for the Amiga, Miner said. "With the Bridgeboard we can stick in a PC-based image processing card, grab an image

[with a scanner], and then access the image from the Amiga."

Once the scanned image is imported into an Amiga window, it can be manipulated by the Amiga. The Amiga has "very high-performance" graphic capabilities, according to Miner.

Using an ethernet card, Miner's Amiga is networked to DEC, Sun, and other Unix and VMX-based workstations, as well as mainframes and PCs, Miner said. "For offices with minis and PCs, an Amiga with a Bridgeboard provides a much nicer alternative to just buying a PC or just a VT100 terminal," he said. "For the price of a VT100 terminal, the Amiga provides a nice multiuser, multitasking menuing terminal with a PC compatible side."

## We want you to read the fine print.



Every monitor company talks about resolution. But the proof of quality is in what you see—not what you hear. Compare the Amdek 410 to any other monochrome monitor. You'll see that there really is a perceptible difference.

The 410 features a flat 12" screen with a nylon mesh filter that actually increases character contrast and decreases unwanted glare. And thanks to the dynamic focusing capability, the type on any part of the screen—sides, corners, top or bottom—will be as sharp and clean as the type in the center of the screen.

What's more, depending on the software and video card you use, the 410 can display up to 132

columns by 44 lines of text, giving you increased spreadsheet capability. Amdek even offers an optional tilt/swivel stand that allows you to select a viewing angle that's most comfortable for you.

Something else you'll find comforting is our warranty—three full years on the CRT and two years on parts and labor. To our knowledge, there's not a better warranty available anywhere.

It all adds up to more monitor for the money. But that's not surprising—seeing that the 410 is another fine product from Amdek.

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## Firm Introduces An Upgrade Of Keyboard

By Renee Mathews

In an effort to simplify desktop publishing applications, Key Tronic Corp. recently introduced Release 3.0 of its KB-5153 Touchpad Keyboard, an upgrade that adds software support for popular desktop publishing programs.

Built-in software drivers make the keyboard compatible with Microsoft's Windows, Microsoft's Mouse, and Digital Research's GEM graphical interfaces, the company said.

The KB-5153 Touchpad eliminates multiple keystrokes by offering pointing capabilities that serve as mouse alternatives and a function key mode that can be programmed to create up to 36 function keys.

The KB-5153, which operates with IBM PCs, ATs, XT's and compatibles, will retail for \$399. The keyboard comes equipped with snap-in template overlays for DOS, Lotus 1-2-3, and Wordstar, a stylus, which can be used in graphics mode to create shapes on the screen; a manual; and touchpad driver software that requires less than 20K of memory.

The company also offers a desktop publishing kit for \$39 that includes configuration files and snap-in templates for Aldus' Pagemaker, Ventura Publisher, and Harvard Professional Publisher.

A 3.0 upgrade kit for users of previous versions is available for \$29. The KB-5153 Touchpad Keyboard and optional kits are available immediately.

Key Tronic Corp., P.O. Box 14687, Spokane, WA 99214; (800) 262-6006, (509) 928-8000 in WA.



News  
Briefs**DCA and Foretec Settle  
Pair of Lawsuit Claims**

Digital Communications Associates Inc. and Foretec Development Corp. said they have settled the remaining claims of a copyright and unfair competition suit sparked by Foretec's cloning of DCA's Crosstalk XVI communications software.

DCA agreed to drop remaining claims against Foretec and its SoftKlone Distributing Inc. subsidiary, which distributes the Mirror clone. In turn, Foretec agreed to dismiss its counterclaim charging DCA with antitrust violations, and to ask for dismissal of its appeal of a federal district judge's ruling last March that it had violated DCA's copyright of Crosstalk's status and menu screen.

Neither party would discuss whether any monetary settlements were made. Foretec said that SoftKlone will continue to sell Mirror II, a redesigned version of the communications software that originally sparked the legal action.

**Software Industry Deals  
Continue at Record Level**

Software executives have been busy courting one another in a spate of deal-making predicted to continue through the year. According to Adapso and Broadview Associates' Computer Services and Software Industry (CSSI) index, the software industry is hitting record highs for mergers and acquisitions, while other industries slowed down.

The CSSI index tracks deals in all sectors of the software industry. Microcomputer software deals accounted for about 34 percent of the deals, but only seven percent of the value.

**Altus Again Reports  
Revenue, Income Boasts**

Altus Corp.'s sales sweep continued for the quarter ending July 3, with revenues totaling \$9.3 million compared to \$2.4 million for the same quarter last year. Net income totaled nearly \$2 million, a steep hike over the \$668,000 in income earned in the spring quarter of 1986.

Strong support for desktop publishing in Mac and DOS environments contributed to the growth. Altus also reduced administrative and general office costs compared to revenues, said CFO James M. Thornton.

## • SOFTWARE

**Borland Alters Market  
Strategy, Raises Prices****Mac Market Less Price Sensitive**

By Rachel Parker

After pioneering the low-cost software market, Borland has found that in some ways, being cheap just doesn't pay.

In recent weeks, Borland has introduced Reflex Plus and Eureka: The Solver, both positioned as productivity tools for the professional. While the new version of Reflex boasts several new features, one prominent change was the price — nearly triple the original version.

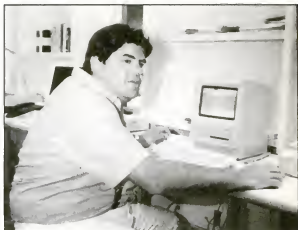
"It is amazing, but there is not much price sensitivity in the Mac market," said Philippe Kahn, president and CEO of Borland. "That is one of the strange things about the market." Kahn believes that it has something to do with hardware pricing, noting that, in general, computer buyers are comfortable spending 10 to 25 percent of their hardware costs on software. "While in the DOS world IBM clones sell for as low as \$1,000, there is very little discounting on the Macs. If someone spends \$5,000 on hardware,

he has no problem spending \$250 to \$300 on software."

Borland has also learned that low-priced software doesn't carry the same cachet in the Mac market that the company was able to establish for it in languages and utilities. "The market has not taken us very seriously," said Kahn. He feels that at \$279, Reflex Plus will get the notice it deserves against similarly priced Mac file managers.

The company also recently released Eureka: The Solver, an equation solving program for engineers and scientists, priced at \$195. And for the DOS world, Borland is expected to ship a word processor and spreadsheet for the business market later this year — all priced in the \$200 range. Finally, with the acquisition of Ansa, Borland has taken on the high-end Paradox relational database.

These new products and prices — as well as Borland's new advertisements — reflect a subtle shift at Borland away



Borland president and CEO Philippe Kahn noted that higher prices will "allow us to support our products better and support our customers."

from the economy side of the market. But company officials are quick to say that they are not abandoning their tradition of low prices. "I don't believe that we have abandoned our platform of giving the highest quality for the lowest price," said Louise Stanley, Macintosh marketing manager. The company still believes it is selling the best quality software within a product area for the price.

Indeed, Borland claims that the higher prices will ultimately benefit users. "We decided that certain products need more support, and the market has lots of issues besides price," said Kahn. "We did our market research and concluded there was no reason not to do what Microsoft and Lotus do — charge more for support. At this level, the price is good, but it allows us to support our products better and support our customers."

And no one can doubt that higher prices will help Borland's bottom line, which some observers say is suffering. "Borland is belatedly finding the problem of low-cost software," said Jeff Tarter, editor of *Softletter*. "It is very difficult to sustain any financial growth with a low-cost strategy."

In Borland's recent financial statement for the year ended March 31, the company reported an eight percent increase in sales worldwide, but European sales grew from seven percent to 20 percent of total sales, said Tarter. "You must recognize that domestic sales dropped. Total dollars suffered a setback last year."

While Kahn would not confirm any decrease in sales in the United States, he acknowledged that higher prices for software products will be good for the company's health.

**Tandy Expected to Gain More  
Respect With New Products**

By Paulo S. Stone

Although Tandy's recent product announcements held little surprises, users and analysts agreed that the new systems should help the company gain more respect.

"Tandy is the Rodney Dangerfield of the computer industry," said Dennis L. Teltzow, vice president of research for Eppler, Guerin & Turner Inc., in Dallas. "Up until now they haven't got the respect they deserve."

More agree with Jonathan Yarmis, senior research analyst for the Gartner Group Inc., that the new products address Tandy's traditional market and, particularly with the Tandy 3000 repricing and introduction of the 4000, that the company is also signaling its entry into the business arena.

The Tandy line is full — perhaps too full, said Yarmis. "Tandy needed to respond to IBM's announcements. IBM's products have a clear product differentiation. There is confusion between the Tandy products, especially at the low end. I'm not sure the changes strengthened Tandy. Tandy filled a gaping hole at the top, adjusted the price on the 3000, and expanded the low end."

Users felt Tandy's new sys-

tems and peripherals will help the firm compete both with IBM and Apple. "It's about time they jumped into the laser printer business," said Paula Ford, co-owner, treasurer, and secretary for Mail Depot, a telephone answering service in Virginia Beach, Virginia. "When we bought our two HD 6000s [in 1985 and early 1986], we looked for a Tandy laser printer, but it was not available. We went with the Mac instead for desktop publishing. It works great for fliers, newsletters, and such, and we must have this capability to remain competitive."

"Tandy was definitely sending a full-scale message to the MS-DOS world about getting serious about that market," said Wayne Day, administrator for the TandyNet users forum on CompuServe, in Fort Worth, Texas. "The message was: Look out world, here we are — one of the big boys."

Tandy director of market planning Ed Euge said Tandy has been trying to increase its visibility the last three years. In 1986 Tandy began furnishing unit sales information to six research firms and restructuring its sales organizations with dedicated sales staff for Fortune 500 corporations.

**Borland Lays Language Plans**

As Borland moves into the midrange applications market, it plans to fully support its languages programs.

Borland officials discussed future plans and the effect of the Ansa merger at the firm's July languages symposium. A key feature will be Turbo languages' capability to access data files from Paradox, the firm's high-end database product.

Turbo Pascal, Borland's flagship product, will advance to Version 4.0 probably before year-end. The new version, according to product manager Gary Whitzin, should contain much of the functionality of the current Mac product, with some interface aspects found in the new Turbo C program. Borland also hopes to link Turbo Pascal with other languages.

Turbo C, with 120,000 copies sold in its first 60 days, will continue to receive development efforts, according to officials. Of primary interest was a debugger, which research and development director Brad Silverberg said would top its competitors. The developers are also reading a range of toolboxes, utility programs with training help, and screen graphics for the language. In addition, the company is committed to an OS/2 version but not a Windows product. Turbo Basic will also gain some debugging capabilities, as well as more toolboxes than the three announced recently. Turbo Prolog will continue to evolve, according to product manager Dan Kernan. "We want to get beyond people just playing with Prolog and have the kind of business developer base for the language as we do for Turbo Pascal," he said.

Paradox, the product Borland picked up with the recent Ansa merger, will not only be accessible from Borland's languages but will likely have an SQL option. An SQL interface to relational data is to be included in IBM's OS/2 Extended Edition and is considered by some to be a critical feature for competition in that segment of the market.

— Jeff Argus

# Best & Brightest

## Lollapalooza laser.

The *Laserline 6* from Okidata is worthy of your undivided attention. Because it's a so-called "low-end" laser printer with some lofty high-end features. It arrives at your door with 15 resident fonts—which means that you don't have to spend a few extra C notes just to get the printing variety you expect from a laser printer. And, if you're concerned about being able to work with programs that can be configured for the HP command set, the required Okidata "Personality Module" emulates the very same. The tried-and-true Ricoh engine produces admirably sharp black type, and graphics can be printed in low, medium, and high resolution. **And the price is a scorcher.** Check our **Tip Sheet** for more hints, and call us with your questions.

Okidata Laserline 6 ... 1 year ..... **\$1299**

Personality Module ..... **\$159**

(see PC Magazine 4/28/87 for more information on laser printers.)

## Eureka! You've found it!



Borland's Eureka 1.0  
(not copy-protected, 3 1/2" disk available)

If you're the kind of person who likes or needs to solve equations, then you're the kind of person who's going to like and need *Eureka*. This program will remind you of that kid you couldn't stand in your algebra, trigonometry, and calculus classes. Not only does it always get the answer right, but it does so in almost no time at all. Even the most complex linear and non-linear equations. And if you buy *Eureka* or *Turbo Basic* between August 1 and September 30, you'll be entitled to your choice of *Turbo Pascal*, *Superkey*, *Selectric*, or *Lightning* ABSOLUTELY FREE!

**\$99**

## One-two-three Funk.

Funk Software, the people who turned spreadsheets on their ear with *Sideways*, now have two other great programs for 1-2-3 enthusiasts. *Noteworthy* lets you create notes up to 8000 characters long and put them behind spreadsheet cells. There's even a little indicator, so you know when there's a note behind your numbers. *InWord* is the fully-integrated 1-2-3 word processor that eliminates the complexities of creating text with built-in spreadsheet information.



Funk Software (not copy-protected)  
*Sideways 3.1* ..... **\$42**  
*InWord 1.0* (3 1/2" disk available) ... **\$49**  
*Noteworthy 1.0* (3 1/2" disk available) **\$49**

## Tip Sheet.



Name: Bob Ziman, Sales Supervisor

**Claim to fame:** Was once stranded on safari near the infamous snows of Kilimanjaro.

"Ready for a laser printer? First big question: Can your applications program drive it? (In other words will your word processor or spreadsheet freak out when you tell it to send bits to a laser?). Most popular programs, like *WordStar 2000* + (see right page, top) have the command sets to do it. And, with a printer like the *Laserline 6* (above) you can run any program that supports the HP LaserJet command set (an industry standard). Second big question: How much extra will it cost to get the fonts you want? One of the reasons we like the *Laserline 6* is that it comes with 15 resident fonts. Need more information? I'd suggest taking a look at PC Magazine (4/28/87) for an overall comparison and font chart."

## Enable yourself.



The Software Group  
**Enable 2.0** (not copy-protected, 3 1/2" disk available) ..... **\$399**

If you're getting tired of all the "Yes, but's..." associated with trying to get data from your word processor into or out of your spreadsheet, database, or communications software it's time you took a good look at *Enable*. The new version (2.0) of this highly-acclaimed integrated software package combines those four popular applications with *Perspective*, a 3D graphics program that now comes fully-bundled with *Enable*. Yes, Virginia, there is a program that can do it all.

## Versatilize your EGA.

Versatilize may not be a verb, but *Display Master* is superlative software for people with an EGA adapter and monitor. It will let you customize the number of lines and columns on screen, select color attributes, and edit character fonts one pixel at a time. And it works with most popular programs, including *WordPerfect*, 1-2-3, *dBase III Plus* and more.

Intersecting Concepts (not copy-protected)  
**Display Master 2.04** (for EGA only; 3 1/2" disk available) **\$39**



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What will you do when the lights go out? Back up disks provide some protection, but backup power supplies do it all. As soon as your favorite utility's juice goes sour, the *DataSaver 400* from Cuesta Systems Corp. will kick in with enough battery backup to keep your system running about 30 minutes. Plenty of time to finish that train of thought or analysis and to make sure that all your data is secured. The rest of the time, this little lifesaver can hide unobtrusively under your monitor (it's only 2" high). *DataSaver 400* was a PC Magazine Editor's Choice. We also offer the 90 and 200 watt models.

Cuesta Systems Corp.  
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## Tech Street

By John Gantz



### Industry Fulfilling Many Early Year Predictions

All right now, let's take stock. We could wait until the end of the year to see how we're doing on our 1987 predictions, but that's like waiting until the end of the quarter to see whether your salesman's going to make quota. You need more time than that to backpedal, create revisionist histories, or look for another job.

If you will recall the January 26 issue, we started by saying this would be an upbeat year. In hindsight, that's not much of a prediction — but remember, 1986 wasn't that great a year. And a lot of people were still pretty bloody from 1985.

But it has been a good year. Industry revenues and earnings are up, stock prices are up (especially on the software side), and unemployment is low. Bankruptcies are no longer a weekly occurrence.

One out of one. We also predicted that it would be a banner year for Digital Equipment Corp. It is. And new announcements this fall (killer, low-price workstations) ought to keep the heat on. Digital just closed out its fiscal year with revenues of \$9.4 billion and earnings of \$1.1 billion, making for an aftertax margin of 12 percent. Two out of two.

Then we talked about IBM and predicted a year of the doldrums that even PCs couldn't pull the company out of, although we weren't tolling any bells for the company's demise either. The PS/2 line looks durable enough not to fall into the lower category, at least, and IBM is picking up in some non-micro areas, particularly in large database software. Let's hold the vote on this one.

The statement about Lotus — essentially that whatever I say, the opposite will happen — is tautologically going to be false. From this vantage point — physically close enough to watch the company sweat in braided MIT students of the same fast as they can wander out of the local 7-Eleven — the company appears to be on a rampage. Major efforts are underway to integrate future product offerings with each other and to develop that mainframe spreadsheet. Two out of three.

We talked about this being the dark side of the Year of the LAN — a reference to the maintenance and performance problems users will start to experience once utilization increases. Since tracking this is a little like looking for dry rot in the wall, let's wait until the end of the year to pull off the Sheetrock. LAN usage surely is going up, but exactly how happy users are with what they're installing remains to be seen. At this point, I think the state of the art of performance analysis and testing is such that most users don't know what they're missing.

Two no-brainer predictions and two controversial ones followed. The

easy ones were that the Intel 80386 will usher in a new era of computing and that Unix will gain increased acceptance. I don't think there's any question about either. Thirty-two-bit computing is becoming the desktop norm in engineering environments; workstations under \$5,000 are out there now and will start to creep into office settings. Dual-Floppy, MS-DOS computing won't disappear — companies are still using keypunches — but all the fun stuff will be on the bigger computers or on board-level 32-bit products. As for Unix, I don't know about you, but I keep seeing more levels of support for it from vendors. It refuses to go away, even in office applications. Four out of five, two on hold.

On the controversial side, I said that desktop publishing would implode, disappear as a hot button, and disappoint vendors. So I was wrong.

From this  
vantage point,  
Lotus appears to  
be on a  
rampage.

So shoot me. Four out of six.

I also predicted artificial intelligence would reveal itself to be a mirage, as would CD ROM. Well, AI is definitely failing out of favor — the hardware guys are croaking, for instance — as a discrete market or buzzword that can draw an audience. In fact, the neural network computer people are pointing to that technology as the replacement for AI. Whether that means replacing it technologically or in the red-ink category isn't clear. As for CD ROM? Let's hold off calling this half. Maybe even for a year or two. If Bill Gates and Microsoft are still pushing the concept as hard at Christmas as they are now, I'll reconsider my call.

Finally, I said nice things about telephone companies as PC marketers. I'll take partial credit for landing a dart on Nynex's having made a smart move by buying the IBM Product Centers, since my information from inside the company is that it is ahead of plan on this line item; that I think AT&T is still blasting away at its own feet, Olivetti notwithstanding.

Let's see, by my count (and better double-check it) that gives me about five out of seven, three on hold. I'll take it and run. OK to shred the January 26 column.

*John Gantz is editor of the Tech Street Journal, a newsletter on the high-tech stock market and business performance. The views expressed are his own.*

## Tech Talk

By Steve Gibson



### 'Buckets' of Electronics Real Driving Force Behind PCs

Last week we laid a foundation for understanding some important

dynamics of electric power consumption. We saw that the flow of electrons through a conductor is in many ways similar to the flow of water through a pipe. Where water flows at a certain rate and under a certain pressure, electricity flows with a certain current and at a specific voltage.

The power inherent in an electron flow is determined by multiplying the current by the voltage. In other words, the power inherent in an electric current is the pressure times the amount of flow.

The multiplicative relationship of pressure and amount creates a reciprocal relationship. If either were to increase, the other would have to decrease by the same percentage for the power to remain constant.

Imagine for a moment the case of a garden hose with an adjustable spray nozzle. Let's assume that the available water supply "power" at the far faucet end of the hose is constant. As we begin closing the nozzle, we create a resistance to the flow of water that lowers the overall rate of water flow. But since pressure and flow are inversely related, lowering the flow increases the pressure, so the water that does come out shoots much farther under higher pressure. Conversely, opening the nozzle removes the resistance at the end. This lowers the pressure in the hose, which raises the overall rate of water flow. So the overall volume of water flow increases, but at much reduced pressure.

Now let's look at the power supply in our personal computers. For the most part the electric circuits in our PCs operate by switching electric currents on and off. They require a constant electric current pressure (voltage) from the power supply, but they continuously vary the amount of current (the rate of electron flow) actually being drawn from that supply. Depending upon the amount of work being done. However, the earlier hose example demonstrates that under constant power delivery, the voltage would vary inversely with the current. If more current were drawn by filling every I/O slot with a card, the voltage would drop, and vice versa. This is why power supplies require regulation. A regulated power supply is able to meet widely ranging current flow demands while maintaining constant voltage pressure. That's what regulation is all about.

I said that the power demands of our computing devices varied, and last week I mentioned that higher speed electronic devices consumed more power than those operating more slowly. Let's see why speed and power consumption are related.

Let's construct a water-operated "hydrocomputer". Overhead is a trough that provides supply water to our hydrocomputer, while on the ground lies a ditch that carries the

used water away. Suspended in midair between the trough and the ditch is an array of buckets. A 1 binary digit is represented by a full bucket of water while an empty bucket means a zero.

To set a binary number into our "bucket register" we must draw new water from the trough above to fill any buckets that were empty but which now need to be turned from zeros to

For the most part  
the electric  
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switching electric  
currents on and  
off.

1s. We must also empty any full "1" buckets that need to be turned into zeros. The ditch below carries the used water away. As our computation progresses, we're continually needing to change our register's pattern of 1s and zeros to make it represent different numbers.

Now it's clear why faster computers require more power. The more often the bucket register's contents must be changed, the more water, on average, will end up being transferred from the trough above to the ditch below. The average water flow is the current being consumed during the operation of our hydrocomputer.

This example is analogous to the reason CMOS electronic computing devices consume more power when they're operating faster. With the computer's regulated power supply maintaining a constantly regulated voltage pressure, the overall power consumed increases with an increase in average current flow.

In electronic terms, these buckets actually exist inside integrated circuit chips as things called "capacitors" because they have a "capacity" for storing electrons. They require filling and emptying with electrons just like the water buckets in our example; and the more often their state of charge needs to be changed, the more electrons, on average, must flow through the device to make this possible. Additionally, since large capacitors require more time to fill up than small ones, designers are continually struggling to minimize the size of the chip's capacitances to decrease power consumption and increase the system's overall speed.

*Steve Gibson is the developer and publisher of Ricker Free and president of Gibson Research Corp. of Irvine, California. The views expressed are his own.*

## Resources

**August 17-18, Boston:** "Software Futures: An Executive Forum" will give an overview of emerging software technologies for Information Systems management in many areas, including workstations, AI, and networking. Call: (617) 470-3880. Location: Ritz-Carlton. Registration fee: \$825.

**August 17-19, Atlanta:** Sample topics for "Computer and Network Security" include database security, policy issues, protocols, and applications. A case study will also be used to illustrate these and other issues. Call: (612) 442-3300. Location: Omni Hotel/CNN Center. Registration fee: \$895.

**August 20-23, Alexandria, VA:** The Fourth International Fidonet Conference will gather System Operators and users of Fidonet protocol-compatible electronic mail systems. Product displays will also be included. Call: (202) 543-4200. Location: Radisson Mark Plaza Hotel. Registration fee: \$70.

**August 25, New York City:** OS/2 and its implications for the future is the focus of "OS/2, The Next Generation." The seminar will study the enhanced features and performance of the new operating system. Call: (212) 980-9424. Location: Penta Hotel. Registration fee: \$450.

**September 9-12, Santa Clara, CA:** The Seybold Desktop Publishing Conference features a seminar on the past, present, and future of desktop publishing and an exposition with 150 companies in electronic publishing. Call: (213) 457-5850. Location: Convention Center. Registration fee: \$595.

**September 17-18, Denver:** Learn how to prepare your company for the PS/2 and the challenges it presents, as well as to better maximize the potential of existing PCs at "The IBM PC, PS/2 & Compatibles: Maximizing Their Potential." Call: (617) 470-3880. Location: Holiday Inn. Registration fee: \$695.

— Carol Czerwinski

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## • EXPERT SYSTEMS

# Arthur Andersen Manages AI Implementation

By Jeff Angus

**W**hile many organizations believe artificial intelligence technology is far from ready for practical applications, one of the world's largest computer consultants is busy commercializing it.

Arthur Andersen & Co., with over \$400 million in consulting revenues last year, has transcended the stage of experimenting internally with expert systems and is now selling implementations based on various vendors' AI products, said Bruce B. Johnson, the director of the company's Center for Strategic Technology Research. One long-term product for the Andersen consultants is the Aion Development System (ADS), a product for IBM PCs and other systems from Aion

Corp. of Palo Alto, California. Aion and Andersen announced an agreement in July to jointly implement a compiler for ADS that will increase sixfold the execution of ADS expert systems. This is significant due to Andersen's clout, and because slow operational speed is a major criticism of expert shells.

Johnson doesn't see his company's commitment to AI as premature. "We're in the business of providing information services; it's necessary for us to maintain a position on the leading edge of what's available," he said. "We tested it out on ourselves, for internal uses, beginning with a couple of applications in 1982. We made it work for us, and now we are in all aspects of AI: software engineering, tools, expert systems, and text processing."

"We saw it solved some problems on our plate we could

not fix otherwise," Johnson added, specifically in making sense of the vast amounts of unstructured paperwork many clients have. Only 20 percent of the real information in that paperwork is in the words, 80 percent is the non-explicit invoking of known relationships. So, he said, you need a knowledge-rich system so the computer can "know" the non-explicit 80 percent.

Andersen is also implementing expert systems for some of their 200 programmer design projects. "There's always 15 to 20 percent of the system's functionality that's hard to get your arms around, and that can blow out your development budget," Johnson said. He found expert systems good productivity aids for cracking tough concepts.

Andersen's long experience with Aion's ADS has helped both companies. Andersen

bought a site license from Aion that permitted wide legal dissemination of the technology at no incremental cost. And once Andersen installed ADS applications and wanted to distribute a compiler, it benefited both companies to work on the project together. Aion got Andersen's software engineering expertise, and Andersen got the knowledge that Aion had a vested interest in their compiler and wouldn't alter ADS without consulting them.

Johnson says the firm has had its best experiences with risk-assessment systems, as has the industry at large, and that the next major step in implementing expert systems will be in better integrating them with routine software. "The specialized strengths of expert systems are useful, but the routine processing required in a system is far more prevalent," he said.

## Firm Adds Tools To PC Training Videocassettes

By Daniel Sommer

Data Link Research Services recently added two more tools to its "Video Professor" library of personal computer training videocassettes.

Word Perfect — Level II, an intermediate-range program, includes information on macro files and definition, revealing codes, use of thesaurus, auto-backup, systems control (e.g., how to reformat pages without using defaults), cursor control, indents, windowing, block cuts, date functions, and spell checkers. Data Link said.

Lotus 1-2-3 — Level II, also for intermediates, offers aid in creating graphics, relative and absolute cell addressing, range formats and names, combining files, copying ranges and formulas, and database operations, according to the company.

In addition, the program includes instruction in headers, footers, and borders; pointing methods; consolidating information; and erasing. It also contains real-life examples, Data Link said.

The Video Professor series is designed for use by retailers as a bundled complement to sales of a program and by corporate trainers as an adjunct to formal software training sessions, the firm said.

Both programs cost \$79.95 and are available from dealers and the company. Other titles in the series include Introduction to Word Perfect and Introduction to Lotus 1-2-3.

Data Link Research Services, 1536 Cole Blvd., Suite 180, Golden, CO 80401; (800) 225-7798 or (303) 239-9950.

## • INFORMATION CENTER ISSUES

# Keys to Successful IC Management

By Daniel Sommer

**T**here are many sure-fire ways to make an information center fail, but there are also several good ways to keep it healthy, according to a consultant who specializes in information center problems.

PC managers hear lots of advice on how to run a successful information center, but it's important to examine what can cause failure as well, said Naomi Karten, president of management consulting firm Karten Associates, in Randolph, Massachusetts. The former information center manager recently spoke on how she sees the majority of information centers surviving and thriving.

The quick ways to information center ruin, according to Karten:

- Be technology-driven: Go for that snazzy product and never mind whether it serves a purpose in your organization.
- Devise a rule for everything: Establish rules, regulations, guidelines, standards, and protocols. When users call for help, tell them to follow the procedures and read the fine print.
- Help anyone who asks: Never mind how it will impact your work load or whether it will meet your organizational objectives.
- Keep your work a secret from top management: End-user computing is the hottest thing around, so why bother to tell people.
- Don't let the facts confirm a good solution: Use your favorite problem-solving technique, regardless of what the users are trying to accomplish.
- Raise user expectations: Don't worry if you can't deliver; it's whetting their appetites that matters.
- Live for today: Today is all that's important; the future will take care of itself.
- Grow as rapidly as possible: More is better, particularly with the products you support. Compatibility is for spouses, not computers.
- Don't pay attention to how you are helping users become more productive: Your job is to show users the ropes, not to ask whether they swing from the rafters.
- Don't change: Why make it harder agoniz-

ing over user needs and evolving business demands?

Hang highlighted the pitfalls that could beset the information center, Karten then spoke on the key challenges facing the information center manager.

• Managing user demand for training and support service: Users are sold on PCs now. Information centers must cultivate user self-sufficiency; every contact with the information center should leave the user in a better position to solve the next problem himself.

• Controlling expectations of users and management about what the information center can deliver: Try to educate users and superiors about what you can realistically accomplish. Identify your champions — those who recognize both the possibilities and limitations of information center support.

• Balancing standards: Users want successful standards because they know those will allow them to better do their work.

• Addressing data and application needs: Data must be used appropriately and applications developed intelligently. Users are rapidly leaving behind novice status; with the proper training, they can also cease to be data and application novices.

• Coping with user-friendly products that aren't: Vendors must learn that when their products aren't easy to use, you will go elsewhere. If you see something you don't like in a product, let the vendor know.

• Optimizing training: Users must learn to apply PC technology to their business needs; they need to analyze business problems from a computer perspective — and do it correctly.

• Improving your company status: Planned activities are a must. Glitzy monthly reports for top execs, get-togethers with others in MIS for information exchanges, and demonstrations of your latest products are effective ways to spread your message.

• Anticipating tomorrow: Every problem solved will likely create two more. Expect the unexpected, and you won't be disappointed!



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# The Corporate View

By Alex Kask

## Negotiated Licensing Agreements Help to Resolve Management Problems

In my last few columns I have been talking about some of the major concerns of microcomputer managers. Now the time has come to stop complaining and to make some positive suggestions. What do microcomputer managers really want, you ask?

First of all, we at the Microcomputer Managers Association have been trying to resolve some of our management problems through what we call "negotiated licensing agreements" — not "site licenses." "Site license" carries some baggage, so let's use NLA for now.

A negotiated licensing agreement provides the basic structures that are necessary for effective management of software policies and programs. Management includes upgrading, bug information and fixes, copying of documentation, copy protection, and distribution of software, among other things. The foundation of an effective NLA includes a contract formalizing the vendor/customer relationship; coverage of the basic areas of support, such as user/vendor communications, pricing, distribution of programs and manuals, copyrights, control and ownership, upgrade policy, and warranties (an NLA is not simply a volume purchase plan or blanket purchase order); and flexibility in terms of the components of the transaction — a menu approach to meet the individual needs of the customer.

What features should be offered as part of an NLA? My shopping list would include:

- Upgrades — to be included in the license for an annual fee; the right to be able to purchase old versions, no forced upgrades, and continued support for the old version for a reasonable time; the right to skip intermediate stages — to go from Release 2 to Release 4 without being forced to purchase Release 3; and no requirement to return the original system diskettes for an upgrade.

- Copy protection — a negative. I don't want it, and I don't want to pay for it. We all know the reasons why, so I won't repeat them here; and yes, I do know the arguments for copy protection. What I will give is a commitment to police illegal copying and inclusion of a company logo, a user's name, and/or a serial number in the software so illegal copies can be traced.

- Bug notification and fixes — I want to be notified (as a registered user) of known software bugs, and I want fixes or work-arounds for them. I will accept the responsibility of distributing the information within my company or division. Alternative methods, such as access to an electronic bulletin board or a timely, regular newsletter, are acceptable.

- Copying of documentation — the right to make extra or multiple copies of the user manual.

- Hot lines — staffed by experts and available during reasonable business hours. And I don't want to pay the telephone company for the right to listen to canned music for an hour.

- Newsletters — technical, not marketing-oriented, though I will welcome

new product information. But I would expect to see bug notices, upgrade instructions, hardware support, and compatibility information in a newsletter, in addition to interesting product applications. And I would want the right to distribute copies within my company as I see fit.

- And: network licenses, if appropriate; technical training (for a fee or otherwise); and applications development support.

I would like to see a menu approach to

an NLA, with each feature priced separately. Bundling of unneeded services is not a friendly approach and will lose customers in the long run. From the vendor's standpoint, it should also reduce the need for negotiation.

I would also like to see contracts for smaller numbers of units. A company may have 500, 5,000, or 50,000 microcomputers, but it is rare to find a company in which all the micros use the same software to solve the same problems in the same way. If the minimum

effective order size is 500 or 1,000 copies, the smaller divisions with 25 or 100 computers and specialized needs are left out in the cold. And, believe it or not, there can be political problems in trying to come up with a companywide standard, even if there is a large potential user base for a product.

Finally, I would not want to pay for what we consider marketing-oriented services, such as the privilege of beta testing or of getting early release copies and demo disks or update information.

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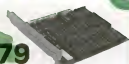
Alex Kask, a CPA, is a senior manager in Ernst & Whinney's Computer Audit Department and is president of the Microcomputer Managers Association. The views expressed are his own.

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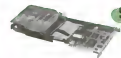
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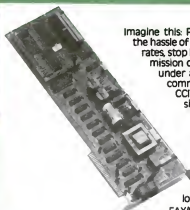
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# Multiscanning Monitors

BY KEN MILBURN, REVIEW BOARD

The microcomputer industry is like some third world country. There's a revolution every six months — each time some new leader promises a better life for the people. There's no question that higher resolution color displays enrich the life of every computer user. But in this revolution, every time a new standard bearer comes along, the cost of living goes up. Each higher resolution card requires a new higher resolution monitor.

Nippon Electronic promised an end to that misery when it invented the NEC Multisync monitor. Not only was it capable of working with all the currently available popular color and graphics cards, including the rapidly emerging EGA, it had the potential for use with even higher resolution displays. NEC also set several other precedents: The Multisync was the first relatively affordable monitor that would accept analog input. The screen area was larger than the prevalent 12 inches. And you could switch to text mode to change the white letters to a more pleasing color. The result was such a hit that virtually every household name in Japanese electronics has jumped on the bandwagon.

Just in time too. Higher resolution graphics cards, at constantly lower prices, are popping up everywhere. Extended EGA cards push resolution to 640 by 480, 752 by 410, and even 800 by 600 pixels. (This last comes close to the advertised maximum of most of the monitors in this report.) Also, the Macintosh II, most of IBM's PS/2 series, and AT&T's increasingly popular Targa board use analog output signals to gain access to a larger color palette at a reasonable cost. (Most of the monitors in this report will work with those machines as well.) In other words, if you don't want your investment in a color monitor to be shorter lived than a Hollywood marriage, versatility is the name of the game.

We tested nine multiscanning monitors, three of which are 19-inch models suitable for use in professional graphics or as displays for group viewing at trade shows, lectures, and training sessions. Testing was done in two stages. First, we hooked them up side-by-side to a variety of AT-class computers and used them for daily operations (running Microsoft Word, Lotus 1-2-3, and a variety of graphics packages). The object was to see how well we lived with them. Second, we ran a more objective series of tests to

determine picture quality. In this series, we wanted to eliminate the influence on performance that a variety of display cards and computing equipment might have. The computer used was a Tandon PAC 286. Its small size gave us easy access to the card slot and video connector. The display card was NSI Logic's Smart EGA, chosen because it is capable of resolving images at 800 by 600 pixels, thus pushing the limits of all the monitors tested.

We had no trouble finding software drivers for any application we cared to use. We used Microsoft Windows, Generic CADD, and the Smart's color diagnostic disks for test software. For the 800-by-600 image test, we used Generic CADD's driver for the 800-by-600 mode of the Photon Mega board (which the NSI Smart EGA emulates). Most manufacturers claim their monitors will achieve this resolution; not all could do it in the particular tests we ran. If you plan to buy one of these monitors for its capability to run that resolution, you should test the monitor with the specific program you want to run and with the specific board you intend to use.

We found the 640-by-480 extended EGA mode the most universally useful resolution setting for all of these monitors. It produces a square pixel that makes it unnecessary to calculate screen aspect ratios when using graphics or publishing software, so that a circle on the screen is still a circle on paper. Furthermore, most current releases of the most widely used software support that display mode. Finally, none of the monitors had a serious problem with edge distortion at this resolution.

The 800-by-600 resolution used in our tests is supported by several computer-aided drafting programs, and some board makers provide drivers for Windows and other applications. This resolution also produces a square pixel, so it could be quite useful for business graphics, publishing, and paint programs.

Finally, a note about setup and serviceability. All of these monitors were set up for automatic mode switching, right out of the box. Since the display card we used was also smart, there was nothing at all to set up.

If you plan to buy one of these monitors to use with one of the new analog computers or display cards, be sure that the documentation (minimalist in all cases) illustrates the function of each pin connector so that you can build or buy the proper connecting cable. None of these monitors comes with anything but the standard IBM color cable.

All of the 13-inch monitors (many of which claim to be 14-inch monitors) are made by major Japanese vendors with numerous service outlets throughout the country. The larger monitors are rarer, and it will pay to be sure the dealer is capable of servicing the units.

the competition.

In terms of image quality, there's little to either complain or rave about. Color fidelity is better than average. Distortion is slight. Although the monitor is supposed to deliver 1,024-by-1,024 resolution, we couldn't get an 800-by-600 image. Everything was acceptable at all resolutions and modes below 752 by 410. A loud carrier tone of about 15 kHz occurs any time the screen is blank, an outstanding feature if you want to hear from all the dogs in the neighborhood.

Front panel controls are minimal, including brightness and contrast controls, a degaussing button, and a text switch. All other controls are at the back. A single 9-pin input connector takes care of both types of input.

Conrac 7250 Autotrak, \$2,995; Conrac Display Products Group, 600 N. Rimsdale Ave., Covina, CA 91722; (818) 966-3511.

## Electrohome Variscan

Of the 19-inch monitors evaluated here, the Electrohome wins the beauty contest, while resolute with quality breeding.

Our impression of quality turned out to be justified when we ran our image tests. Vividness and correctness of color were perfect in the palette test. The non-glare surface is best of the bunch. Electrohome's use of an incredibly long-persistence phosphor also gives it the steadiest picture. There is a penalty exacted from the extra steadiness, though. Sudden changes in the image produces a strobed ghost image that lasts for close to a second. So this version of the Electrohome disqualifies itself for use in animation. This may not be the monitor for drafting either. (Electrohome does offer a short-persistence model as well.) We could not push the Electrohome to display at 800-by-600 resolution with our NSI Smart board, although product literature states that the monitor can display 1,024 by 512 (noninterlaced) and 1,024 by 800 (interlaced).

This is the only Goliath monitor with a power switch at the front. Brightness and contrast controls are also up front.

The back panel looks like a technician's dream: There are four controls each for fine tuning vertical size, vertical position, horizontal size, and horizontal position. Major adjustments for vertical and horizontal position are made with twist knobs. In/out switches are used for automatic/manual modes, over/under scan, and analog/TTL. Separate 9-pin connectors exist for TTL and analog signals. And there's a degaussing button.

ECM 1911 (long-persistence phosphor), \$2,895 (short-persistence model, ECM 1910, \$2,795); Electrohome Electronics, 809 N. Wellington St. N., Kitchener, Ontario, Canada N2G 4J6; (519) 744-7111.

## Conrac 7250 Autotrak

The Conrac is the bulkiest of the 19-inch monitors evaluated. It's four inches deeper and several pounds heavier than

## Magnavox Multimode Display

The Magnavox looks so much like the

Thomson and Mitsubishi that we were at first fooled into thinking that it might have the same innards. The feeling is reinforced by the same audible click when display modes change. In fact, there are notable differences.

The back of the Magnavox has an input for audio. That would be really handy if there were also a composite video input because you could display taped and broadcast signals with sound. No such luck. Still, the audio input and built-in speaker will be useful with computers (like the PS/2s, Mac II, and Amiga) that have sound-generating capabilities.

In addition, the back panel boasts a digital/analog switch, three controls for vertical size, one control for vertical position, and one for vertical hold. There's a single 9-pin input for both TTL and analog input.

This is the only monitor in the group that has the power cord hard-wired into the chassis. You won't lose it that way, but you may wish you could replace it should something happen to the plug. The video cable, on the other hand, can be exchanged. But this monitor uses a male 9-pin connector. If you lose the cable, you aren't likely to find another at your local store.

There is a nice complement of controls that are conveniently located under the lip of the tube frame: horizontal position, brightness, contrast, volume, and a text switch that turns the image a pleasant green. When we ran the Generic CADD resolution test, there was a 3-inch difference between the position of the title screen and that of the drawing screen, so we were glad to find the horizontal position control tucked under the front bezel.

The Magnavox sports the best non-glare surface in the group next to the 19-inch Electrohome. Its color fidelity is also top-flight, ranking right along with the Mitsubishi, NEC, and Electrohome monitors. Finally, its image is the steadiest of the 13-inch monitors we reviewed, with no edge distortion at all. Too bad we couldn't get an 800-by-600 image, though Magnavox claims to provide 926-by-560 resolution.

Magnavox 8-CM-873 Multimode Display, \$899; NAP Consumer Electronics Corp., 1440 and Straw Plains Pike, Knoxville, TN 37914; (615) 521-4316.

## Microvitek Autosync

The sheet metal case of the Microvitek gives it an industrial look, but there's a



The 19-inch Conrac Autotrak offers good color fidelity and slight distortion.



Electrohome's Variscan uses long-persistence phosphors for a steady image.



Microvitek's Autosync boasts the most versatile front panel of the big monitors.



The switch on Mitsubishi's Diamond Scan assures monochrome compatibility.



Thomson's versatile Ultra Scan offers the same mono switch as Mitsubishi's monitor.



NEC's pioneering Multisync is the most widely distributed of the monitors tested.

smooth plastic frame around the tube that helps it to blend with other office equipment.

This is the only 19-inch we tested that could pass the 800-by-600 test. Microvitek claims that the Autosync has a maximum 1,024-by-580 resolution.) Despite the polished (glary) tube surface, this is the right monitor for detailed drafting work. The fact that colors are washed out and inaccurate will be less important than the capability to see a large amount of sharp detail at once. Image steadiness is good, but it can't match that of the Electrohome.

The front panel is the most versatile of the big multicolors. There are switches to select one of four video sources, lights for degaussing and power, and mini-ports for vertical height and position and horizontal width and position.

Unfortunately, the power switch is at the rear, and it's tough to reach behind this big box. Also in the rear are separate 9-pin connectors that take care of analog and TTL input. Switches let you choose between 16- and 64-color modes and also between automatic and manual modes.

Definition Autosync 1019/SP, \$2,195 (long-persistence mode), 1019/LP, \$2,195; Microvitek Inc., 1943 Providence Court, Airport Perimeter Business Center, College Park, GA 30337; (404) 991-2246.

## Mitsubishi Diamond Scan and Thomson Ultra Scan

If adaptability to a variety of standards and uses were the criteria for choosing this type of monitor, the Mitsubishi and Thomson models would win the game. We lump them together in this report because both were designed by Thomson and engineered and manufactured by Mitsubishi. Anything we say about one applies to the other, except a few things we have noted.

The versatility of the Mitsubishi and Thomson monitors is obvious from their back panels. There are separate ports for analog (25-pin) and RGB TTL (9-pin) inputs. There's even a connector for composite video, in case you need to

connect your VCR — or in case you want to superimpose digital graphics over TV images. There's also a mono/normal switch that will let you use the monochrome Hercules Graphics mode of your EGA card (if it has one).

The monochrome switch on these monitors differs from the text switch found on some of these other multisync displays. A text switch lets you convert from the intense blue to a more pleasing green when the application is accessing monochrome mode; a monochrome switch actually disables the pins used by most color adapters and enables the pin used by monochrome and Hercules — thus creating monochrome compatibility in hardware.

There are also switches for analog/TTL/video input and over/under scan, which let you adjust text size. Finally, these are the only monitors that have color and tint controls for careful adjustment of the color palette.

These monitors present a clean and pleasing appearance. The power switch is mounted flush in the frame, and brightness and contrast controls are out of sight but handy in their locations under the

frame. Unfortunately, the monochrome switch is at the back.

Although identical in outward appearance and features (except for the logo), the Mitsubishi's image quality and color palette (at least in our test model) were slightly better than the Thomson's. The Mitsubishi's colors were more intense, and its white was cleaner. While the Mitsubishi's image was steady, the Thomson exhibited a slight flicker.

Both monitors passed our Generic CADD 800-by-560 resolution test without any reconfiguration. In that mode, the text at the very edges of the screen was slightly skewed but still readable.

Both the Mitsubishi and the Thomson click when changing modes or switching between applications. It's loud enough to make a novice wonder if he's blown a fuse or chip; but the noise does not affect performance.

Mitsubishi Diamond Scan Model AUM 1371, \$889; Mitsubishi Electronics America Inc., Computer Peripherals Division, 991 Knox St., Torrance, CA 90502; (213) 515-3993.

Thomson Ultra Scan, \$895; Thomson Information Systems Corp., 5731 W.

Slauson Ave., Culver City, CA 90230; (213) 568-1002.

## NEC Multisync

The pioneer in multisync monitors still holds its own among its competitors. Although it's a little less versatile (it will not work with an MDA or Hercules adapter), it's still one of the best looking designs and offers a top-quality display. More important, it is still the most widely distributed and best supported box in this class. And, because it is so common, buyers can often find some excellent bargains.

The design feature we like most is the deep bezel that frames the tube. It does a good job of shading the surface from side light and helps in cutting down glare. On top of that, the NEC is the only monitor in the group that came with a tilt-and-swivel stand.

Our biggest complaint vis-a-vis the NEC design is the inconvenient location of its controls. There's nothing on the front of the box. The power switch is on the back (along with all the other controls noted below). Controls for vertical hold, horizontal and vertical position, brightness and contrast, text mode, and horizontal width are located under a small door at the top of the machine. Fortunately, this monitor reads most modes so well that it's seldom necessary to touch the switches. And the monitor's text switch made the screen readable when the software tried to access the Hercules mode in our NSI Smart EGA board.

The NEC has six DIP switches on the back for setting text colors and for forcing the monitor's display mode. You can toggle between automatic and manual mode switching. There's also a TTL/analog switch. The only video connector is a 9-pin input. NEC promises to have adapters for the PS/2, Mac II, and AT&T Targa boards.

The Multisync's color palette is nearly perfect, with the exception of the reds, which are a little too "brickish." The image is always vivid, regardless of the application being used. Text is undistorted.

We could get a 800-by-600 image in our Generic CADD test, but only after

## Displaying Monochrome Applications

While these multisync monitors can accommodate a wide range of resolutions of video modes, they do have one drawback. They have trouble adequately displaying monochrome or Hercules modes. The key word here is "adequately."

You see, most color displays use a kind of low-persistence phosphor that expects to be refreshed 60 times a second (i.e., at a rate of 60 hertz). The monochrome refresh rate standard, however, has been defined at 50 hertz, and monochrome monitors compensate with a longer persistence phosphor. So the graphics boards that display monochrome adjust their video mode to refresh the display at 50 hertz for monochrome monitors. Color monitors, however, can't adjust their phosphors, so the resulting display, depending on the ambient light, can be a disturbing flicker.

Another factor that affects a multisync monitor's capability to display monochrome or Hercules mode is the synchronous frequency range. The Hercules adapter has a synchronous frequency of 18.4 kHz horizontal and 50 hertz vertical. You want to make sure that the color monitor chosen for monochrome displays has a frequency range that encompasses these specs. All of the monitors evaluated in our comparison do. But what you see when most of these monitors try to display monochrome is a deep, unreadable blue. That's

because monochrome adapters tend to fire the blue gun in these color displays. Monitor manufacturers get around this problem in several ways.

Sony added some intelligence to its Multiscan box that tells when the scan rate is 50 hertz and when the blue gun is being fired. It then switches to white on black.

Several manufacturers have installed a text switch on their monitors. These let you change the display to green on black, sometimes amber on black, or, in the case of NEC's Multisync, to any of seven different foreground colors. In essence, you choose one color from a multitude available to you.

Thomson and Mitsubishi offer monochrome switches. These actually disable pins 3, 4, and 5 used by color displays, and enable pin 7, used by monochrome. The effect is monochrome compatibility accomplished in hardware.

And other manufacturers, like Magnavox, take the position that the best solution is to display Hercules software in EGA colors and EGA resolution, and thus get around the refresh problem mentioned earlier. The trick here, of course, is to find a board that accomplishes that feat. The NSI Smart EGA does, and we've heard (but not tested to find out) that the ATI Wondercard and Magnavox Multires Graphics cards do well.

—Rochelle Garner



The sleek Sony Multiscan displayed its sharpest image at 640 by 480 pixels.



Taxon's 770 offered the best 800-by-600 image of any of the monitors here.



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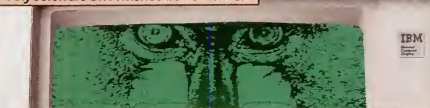
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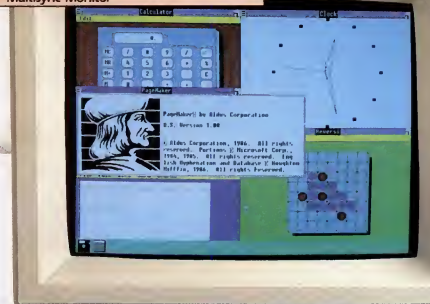
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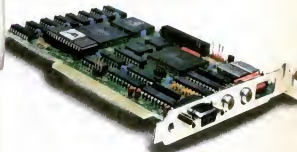
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## Some Alternatives

Other recently released monitors that may be worth considering:

- The Casper Multiscan TE-5155 provides a maximum resolution of 800 by 600. The \$899 price tag (suggested list) includes a tilt-and-swivel stand and a text switch that adjusts monochrome display to green on black or amber on black.

T.W. Casper Corp., 2153 O'Toole Ave., Suite E, San Jose, CA 95131; (408) 922-7222.

- Nanao USA Corp.'s Flexscan 8060 comes in two models: the 8060S, which offers a 28 dot pitch, and the 8060H, which comes with a 31 dot pitch. They list for \$919 and \$889, respectively. Each offers 820 by 620 maximum resolution; each provides a

text switch.

Nanao USA Corp., 23510 Telo Ave., Suite 5, Torrance, CA 90505; (213) 325-5202.

- The Tatum Omniscan CM-1495, which carries a suggested retail price of \$875, provides a maximum resolution of 800 by 560 pixels. The price includes a tilt-and-swivel base and a text switch that lets users adjust monochrome display to green on black, amber on black, or white on blue. Its companion graphics board, the Omniscan 900, lists for \$399 and offers VGA, EGA, CGA, Hercules, MDA, and 132-column video modes.

Tatum Co. of America Inc., 2850 El Presidio St., Long Beach, CA 90801; (213) 979-7055.

We adjusted the vertical hold and dithered with the back-panel switches (as recommended in the Smart EGA's addenda). There was, however, noticeable pin-cushion distortion (an effect in which the lines at the top and bottom of the screen are slightly wider than those in the center), and the command line at the bottom of the screen was a bit jagged. At lower resolutions, pin-cushion distortion was very slight, and text read well to the very edges of the frame.

Multisync (800 by 560), \$899; Multisync Plus (960 by 720), \$1,399; Multisync XL (1,024 by 768), \$3,199. NEC Home Electronics (USA) Inc., 1255 Michael Drive, Wood Dale, IL 60191; (800) NEC-SOFT for technical support, (800) 447-4700 for the nearest local dealer.

## Sony Multiscan

The Sony Multiscan looks more like a high-tech TV than a computer monitor, thanks to its Trinitron logo and sleek gray case. Despite its obvious workmanship and ruggedness, the quality of the display itself was a disappointment. It took considerable adjustment to get a solid black background. The palette was also on the dull side. Reds are better than average, but at the cost of a pinkish white. Finally, the dot pitch, smaller than the competition's (0.26 vs. 0.31), makes the picture seem grainier.

Although the Sony claims a maximum resolution of 900 by 560, the 800-by-600 Generic CADD drawing showed considerable pin-cushion distortion with our NSI Smart board. At a 750-by-410 resolution, the distortion is less pronounced, but this is a mode primarily useful for bigger than average spreadsheets. When we switched to 640 by 480, the most accurate mode for WYSIWYG, we got little to no image distortion.

The most used controls — power, brightness, and contrast — are located on the right side. Although that location is handy enough, the knobs are a little hard to feel because they're so deeply recessed.

The Sony's back panel sports a "Normal/D1/D2" switch (for the two TTL standards used in Japan), a scan mode switch, and another for digital or analog input. There's only one 9-pin input connector, so 900 by 560 need special cables or adapters for the Apple, PS/2, or other non-IBM computers or graphics cards.

Sony Multiscan (CPD 1302, \$945; Sony Corp. of America, Sony Drive, Park Ridge, NJ 07656; (800) 222-SONY, (201) 930-7669 in NJ.

## Taxan 770

Taxan proved to be the sleeper of the bunch. We tested it last because our first impression was that it seemed so "me too." So we were surprised to discover that it wins the image quality contest by a nose. The color palette was perfect and the image was steady as a rock. We also got the best 800-by-600 image of the lot, and we found no edge distortion or color convergence problems at all. Also contributing to image quality is a nonglare tube surface that comes close to matching the Magnavox's.

The Taxan has more front controls than the competition, but they're hidden on the side, out of sight but easy to reach. As expected, there's a power switch, as well as brightness and contrast controls. There are also controls for vertical and horizontal position. We were surprised at the omission of a text switch.

In plain view on the front are three LEDs. One is for power; the others let you know whether the input is TTL or analog.

The back panel of the Taxan is almost as complex as the back panel of the big Electrohome. There are 16 fine-tuning controls for vertical and horizontal size and position, all covered by a thin piece of clear plastic for protection. Switches are of the in/out type: auto/16-color, auto/manual mode, and over/under scan. There are separate 9-pin video connectors for TTL and analog signals, but there is no hardware switch for choosing between the two. Instead, the monitor senses which is being used.

Taxan 770, \$945; Taxan USA Corp., 18005 Courtney Court, City of Industry, CA 91748; (800) 772-7491, (818) 810-1291 in CA.

## Executive Summary

What strikes us most is the consistently high quality of these monitors. We have a tough time choosing among the NEC, Mitsubishi, Magnavox, Thomson, and Taxan on the grounds of image quality; the Taxan does have a slight edge in this regard. The NEC would be our choice for simplicity and serviceability. Overall, Mitsubishi wins when it comes to versatility, while its image quality is so near the top of the class to quibble over.





## Short Looks

Short Looks are quick, initial looks at products by members of InfoWorld's review staff and the InfoWorld Review Board. They are not intended to be full reviews of the products.

### IBM PS/2 MODEL 25

When I caught my first glimpse of the Model 25 at the IBM announcement August 4, my immediate impression was that I was looking at a deformed Macintosh. When the stage lights came up, the illusion was shattered and I saw its similarities to the rest of the PS/2 line.

The Personal System/2 Model 25 is an 8086 computer similar to the Model 30.

On the system board IBM puts an 8086 CPU running at 8 MHz with no wait states; a socket for an 8-MHz 8087 math coprocessor; 512K with sockets to round it out to 640K; one 3½-inch 720K floppy disk drive (second one optional); a serial port, parallel port, mouse port, and keyboard port; an audio port (earphone jack); and an MCGA video adapter that connects directly to the built-in monitor.

You can add one full-length PC XT expansion card and one short card (up to 8 inches long) to the system. The cards plug into a "riser" card, which in turn plugs into the system board. The mechanical mounting of this riser card is a big improvement over the flimsy mount-

ing of the similar riser in the Model 30.

The 12-inch analog monitor — color or monochrome, your choice — is built into the case, instead of being separate, as has been IBM's practice in PCs. The monitors look like the 8502 (monochrome) and 8513 (color) monitors offered with other PS/2 models.

You get another choice: keyboard type. The Model 25 can come with the Enhanced keyboard, a standard on the PS/2 line. But if you are tight for desk space you can get the space-saver keyboard, the Enhanced keyboard with the numeric pad folded into the alphanumeric keys, like the ones many laptops use. The four cursor keys and six extended function keys remain. There must be significant differences between the keyboards, because the space-saver keyboard is available now, but the Model 25

with the Enhanced keyboard isn't due out until October.

The Model 25 is IBM's "affordable" education computer. The \$1,350 (for monochrome, \$1,695 for color) gets you only 512K, one floppy drive, and the space-saver keyboard. For an additional \$219 you can get a fully equipped system with 640K and two floppy drives, the minimum usable system even for students, in my opinion.

IBM seems to feel the same way, since their Collegiate version of the system is sold with the full RAM and the second floppy drive. Add to that the Collegiate Kit for \$314, which contains the IBM PS/2 Mouse, PC-DOS 3.30, and Microsoft Windows with Write, Paint, and Cardfile. Note that few, if any, students would pay the full list price of \$1,883; we expect \$1,250 to \$1,300 to be a more realistic price for systems purchased at a participating school.

IBM is also pitching this system to the business user, particularly for low-end applications that are human-intensive, such as basic word processing and graphic front-end capture. The small footprint is a benefit on dorm room desks and also on cluttered desks in the office.

One feature that makes the Model 25 a great choice for small businesses and schools is easy access. Remove two screws, and the system hinges open to give you full access to the system board and any expansion cards. Changing a bad system board for a good one appears to be easy enough. This means that schools don't have to hire expensive technicians to keep the Model 25 working.

The Model 25 lacks two important features, in my thinking. First, there is no inexpensive network connection built into the planer board. Second, IBM has announced no availability for hard disks in the system.

The network question is a touchy one. No LAN has stood out as the clear leader, even in the IBM world. Apple elected to include a slow LAN in the Macintosh to provide an inexpensive solution for small networks, and that seems to have worked out quite well. The IBM LAN software has too much overhead, so rather than develop yet another LAN program IBM elected to use existing hardware and software solutions.

The lack of a hard disk is more of a problem — particularly if IBM expects customers to run Windows. There is a connector on the system board for a hard disk, but IBM has not announced availability of a hard disk for the Model 25. Bill Lowe's suggestion during the announcement was that if you want a hard disk, you should buy the Model 30.

Those businesses planning to use the Model 25 on a network will be less concerned with this, but small businesses using this system as they would an IBM PC XT will miss the hard disk when their applications outgrow floppy disks.

IBM has traditionally been the high-priced system. School board budgets cannot ignore the cost of the Model 25, especially since a LAN would add about \$450 (before discounts) per system plus the cost of a server system such as the PS/2 Model 60. Colleges have a little more money to play with as a rule, and can better afford a higher priced system. Some colleges also have IBM mainframes for student work; connectivity to those mainframes can be important.

To me, the Model 25 is not the ideal product for either education or business, although it is unquestionably the least expensive solution IBM currently offers. Like all computer purchasing situations, you have to look at all the costs.

— Stephen Satchell

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External 140 MB	S140	18ms	No	Yes
External 240 MB	S240	18ms	No	Yes

\*Available for mounting in place of a floppy drive with bus activity LED or as normal internal mount.

\*\*Same specification as Apple hard disk.

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## Software Reviews

Subjectively, Paradox 2.0 felt even faster than it tested, probably because it was such a joy to use on a daily basis. We never felt that we had to wait for the program to catch up.

## • REVIEWS SCORING

InfoWorld reviews only finished, production versions of products, never beta test versions.

All products receive scores ranging from unacceptable to excellent in various categories. We then weight the scores in different categories (giving the most weight to the performance and value categories) to produce an overall numeric score for the product. Scores should be judged as follows:

10 — Excellent 9-10: —  
Tops in its class

Very Good 7-8.9  
Meets all essential criteria and offers significant advantages

Good 6-6.9  
Meets essential criteria and includes some special features

Satisfactory 5-5.9  
Meets essential criteria

Fair 3-4.9  
Falls short in essential areas

Unacceptable 1-2.9  
Fails to meet minimum standards

Also Included  
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## Ansa Paradox 2.0

Paradox Database Offers Features, Reliability  
Program Now Has LAN Support, EMS, Enhanced Performance

By Don Crabb Contributing Editor

We'll cut right to the bottom line. Paradox 2.0 is to databases what a Volvo 760 GLE is to cars: easy to use, comfortable, reliable, feature-laden, and with an immaculate exterior that belies a lot of horsepower under the hood. This timely update of the popular Paradox 1.1 database (first reviewed June 16, 1986) adds a bunch of new features, including local area network (LAN) support, and some performance improvements to an already solid product.

## FEATURES:

Paradox 2.0 is a high-end, multifunctioned database for IBM PC compatibles and LANs. It works with both data tables (like 1-2-3) and database forms (like dBase), one reason for its continuing popularity in a crowded market. Paradox 2.0 has been extended and refined across the board. Among the major additions are 2.0's support for a number of LANs, as well as both EMS (Expanded Memory Standard) and EEMS (Enhanced Expanded Memory Standard).

This additional memory management capability allows Paradox 2.0 to increase the memory available for data handling and system overlays (the program itself takes up 470K) and for disk caching — all adding up to better performance overall. According to Ansa, the EEMS support is particularly important because it directly impacts the query and sort speed.

Paradox 2.0 takes the good data management environment of 1.1 and makes it better with features like zoom (which allows you to quickly search a particular table for a particular value), the DOS Big command (which allows you to suspend Paradox execution and run another program from DOS, requiring only 100K of RAM to maintain Paradox), fancy multicolumn reports, and automatic table lookups.

Ansa has also strengthened the programming prowess of Paradox 2.0, while

Viewing Struct Table: Record 1 of 6

SOFTLIB	Field-1	Field-2	Field-3	File	R
10	4-IN-1 BASIC ACCOUNTING	ACCOUNTING		1	1
11	411	UTILITY		1	1
12	42-PIPS	DATABASE		1	1
13	4TH DIMENSION	DATABASE		1	1
14	4WORD	WORD PROCESSOR		1	1
15	8 PACK UTILITIES	UTILITY		1	1
16	8FILE ONE			1	1
17	8FILE ONE	DATABASE		1	1
18	ACCOUNTANT, INC	ACCOUNTING		1	1
20	ACCOUNTING PROFESSIONAL	ACCOUNTING		1	1
21	ACTA	UTILITY		1	1
21	ACT/ONTRACKER	MISC.		1	1
22	ALEXANDER	WORD PROCESSOR		1	1

STRUCT	Field Name	Field Type
1	Field-1	A30
2	Field-2	A22
3	Field-3	N5
4	Field-4	N
5	Field-5	A32
6	Field-6	N

SOFTLIB Table has 616 records

Paradox, a full-featured relational database manager, shows records in a well-organized table form. Improvements include 33 new PAL commands and quick searches.

making it easier for an inexperienced database user to create custom applications. Thirty-three new commands have been added to PAL (Paradox Application Language—a Pascal-like database programming language), including Keylookup (for displaying records with duplicate keys), Run Big (for executing an external DOS program up to 550K in size), Coedit (allowing multiple users to edit the same data table simultaneously and show simultaneous updates on all the screens), and Lock (for locking one or more records so a single user has control over them).

Many of the new PAL commands support multiuser LAN access. Paradox 2.0 also adds 22 new PAL functions and some new sample PAL scripts. PAL

scripts are still the driving force behind custom Paradox applications. They control all aspects of the system, allowing you to build individual database applications that work and look like stand-alone programs. You can incorporate custom menus, special report formats, and data entry forms into your applications and distribute them throughout your company by paying a trivial run-time license fee to Ansa (\$9.95 for 250 licenses).

Other new programming tools include the Data Entry Toolkit (pre-built PAL routines to expedite the entry of data into a Paradox 2.0 application), the capability to use external text editors to edit and create PAL scripts, and a new menu-driven application generator that lets

you build applications without knowing how to program in PAL—a big improvement over Paradox 1.1. The application generator, called the Paradox Personal Programmer, is a compiled and updated version of the earlier Paradox application generator called APGEN.

The query-by-example method of finding, using, and modifying Paradox data has been retained in Release 2.0. It works especially well for quick, one-time queries that relate multiple files together. LANs supported include Novell Advanced Network (2.0A and later), 3Com 3Plus (1.0 and later), IBM Token Ring or PC Network with IBM PC Network LAN program (Version 1.12 and later), Torus Tapestry (1.4 and later), and other LANs that are 100 percent compatible with these networks and with DOS 3.1 or 3.2.

The multiuser LAN capabilities that have been added to Paradox 2.0 make it one of the easiest-to-use LAN databases around, as well as one of the most secure. You can simultaneously enter, edit, query, and generate reports from the same table across all the workstations on the LAN. Screen updates of data changes made at other workstations can be set to happen automatically.

Various levels of data protection (different kinds of record and table locking and file access control) and multiple levels of password protection (down to the field level) abound. You can even set up prevention locks that prohibit other users on the LAN from setting certain record or table locks that would hinder a future operation on your PC while working on a specific database.

If you own a specific Paradox 2.0 table on your LAN, you always have full access to it. You can authorize others to access that table in any number of ways. You have five different access rights that you can grant, or you can grant three kinds of

**INFO WORLD** THE PC NEWS WEEKLY

REPORT CARD

SOFTWARE  
**PARADOX 2.0**

	Unacceptable	Poor	Satisfactory	Good	Very Good	Excellent
8.1						
Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ease of Learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## SUMMARY

A fully relational, networkable database management and application development system for the IBM PC and compatibles. Not copy-protected. Pros: Full range of features; easy to learn and use; well-written documentation; nice balance between function and speed. Cons: None significant.

## PRODUCT DETAILS

List price, \$725; \$995, multiuser. Version tested (2.0) available for the IBM PC, PS/2, or compatibles using DOS 2.0 or later or DOS 3.1 or later (network). Requires 512K and two floppy drives, 640K per workstation, and a hard drive on network server. Compatible with Novell Advanced Network, 3Com 3+, IBM Token Ring or PC Network, Torus Tapestry, Ansa Software, 1301 Shoreway Road, Belmont, CA 94002; (415) 595-4469.

file access rights, as well as other specific access rights, including access to reports, data entry forms, and table image settings. (An image is a type of view.)

Besides individual password and access protection capabilities, Paradox 2.0 adds security features that only the network administrator can invoke. A special PAL script that the network administrator runs, called Protect, maps together all system users and their tables and assigns global systemwide passwords to control database access. Protect builds a systemwide user accounting system that lets you log on to the Paradox 2.0 server with a password, automatically establishing your default access modes to different tables.

The report facilities of Paradox 2.0 are enhanced from 1.1, but the basics are still the same. You can now produce multi-column reports and print to special forms easily, including printing mailing labels. The process for report creation has been made more automatic with Version 2.0, and it can be entirely menu-driven.

Paradox 2.0 also retains the good data import/export facilities of 1.1, including the automatic conversion of delimited ASCII, Symphony 1-2-3, Dbase, PFS File, Visicalc, and DIF files.

The overall set of features provided by Paradox 2.0 can barely be outlined here. It's safe to say that this is one database that you won't outgrow quickly.

## PERFORMANCE:

We tested Paradox 2.0 on the same LAN that we used to test other LAN databases. This consisted of 11 IBM PC ATs (8-MHz), Symphonies, an internal 20MB hard drive and 1MB of RAM. Ten of the PCs served as client workstations on the LAN, while one was reserved as the network file server with a second 20MB hard drive to help handle network file access. The network also had one Hewlett-Packard Laserjet printer, a Sysgen 60MB tape backup unit, and a Toshiba 1351 dot-matrix printer attached to the server. With the exception of one small timing difference, the two versions worked exactly the same.

We used PC-DOS 3.2 on each workstation, with Novell Advanced Network 2.0A serving as the LAN software. The length of the network was about 500 feet. We tested both the single-user version and the Paradox 2.0 network pack. (We installed one full pack of six users and five from the second pack — note that the network packs only work on LAN servers.) With the exception of one small timing difference, the two versions worked exactly the same.

Ansa has increased the systemwide capacities for Paradox 2.0. Version 1.1 had a limit of 65,000 records per table, 2.0 raises that to 2 billion. Each of these tables can contain up to 255 columns, as many as 4,000 characters per record, and up to 255 characters per field. Further, Paradox 2.0 can build as many as 15 custom forms per table, each table taking up to 15 pages. You can also have as many as 15 custom reports for each table.

Report size is limited only by your ability to read all the stuff that you can crank out. Similarly, only your own ability to keep queries straight limits the number of tables in a single query operation.

Paradox 2.0 is not the fastest database on the market, either as a stand-alone or as a LAN system. It's also far from the slowest. In our tests of stand-alone relational databases, Paradox 2.0 performed quite well, proving to be the fastest at ascending sorts and unindexed record access. It was in the middle of the performance spectrum for most of our remaining performance tests.

Paradox was a delight to use, both as a stand-alone product and from a local area network server. The main menu's command categories were meaningful rather than cryptic.

The worst performance for Paradox 2.0 came with our measurement of the time it took to import and convert Dbase III Plus and ASCII files. Even in this category it was not the worst performer, beating Rbase System V, Release 1.1 by a substantial margin.

Our stand-alone tests used the same test file of 5,000 records, each record composed of eight fields, with each field holding 74 characters. The tests were run on a 640K RAM IBM PC AT running at 8 MHz. (A 1.5MB EMS board was also installed but not activated.)

Subjectively, Paradox 2.0 felt even faster than it tested, probably because it was such a joy to use on a daily basis. We never felt that we had to wait for the program to catch up.

Network use was especially painless. Tested on the same query benchmark that we had used with the other LAN databases that we've tested (retrieving a single indexed record from a 40,000-record file), Paradox 2.0 also held its own. It was faster than Revelation or iBase and only marginally slower than Unify, Informix/SQL, and Dataflex. Our subjective experience over the Novell LAN mirrored our stand-alone experience. We never had to wait for Paradox 2.0 to accomplish the lion's share of what we were doing.

Paradox 2.0 is an important upgrade to an already good database system. Its local area network features work well and they work quickly. Its stand-alone performance places it squarely in competition with the other major players in this market, beating some of them in key performance areas. Paradox 2.0 combines a transparent network database environment with large data-handling capacities and a slew of features. Together, these factors indicate a very good performer.

## DOCUMENTATION:

Words like copious, detailed, and easy to read characterize the set of manuals that Ansa provides with Paradox 2.0. The overview of the program could serve as a model for other vendors. The network pack also includes a useful network administrators' guide that covers the specific installation requirements and procedures for each of the LANs supported. Good, context-sensitive, on-line help is always just an F1 key push away. Quick-reference guides to Paradox and to PAL are included, along with keyboard templates.

One complaint: Though the network pack supports six users, only a single set of manuals is provided. You can buy five additional sets for each network pack (for a total of six sets per network pack), for \$100 per set. Network software should offer manuals for each workstation on the LAN, not as an extra-cost item.

Other than this point, the documentation is superb, so it rates an excellent.

## EASE OF LEARNING:

Using the Paradox sample tables disk while scanning the introductory manual

proved to be all the time we needed to learn to use the program with reasonable competence. The Lotus 1-2-3-style menus will tap into operating knowledge that you might already have, making the program easy to master. Also helpful are the quick introduction guides for those with previous experience with Lotus 1-2-3 or Dbase.

Since users don't need to do any programming to create and work with some large and sophisticated Paradox databases, novice users will find the system easily accessible right from the start. Our own novice test group (three PC users with 1-2-3 and Word Perfect experience), jumped right into the program without any formal training. At the end of what, they had learned enough to start playing with the Paradox Personal Programmer application generator and the PAL language.

Our novices particularly liked the organization of the manuals and found their way through them quickly. One comment from a tester summed up their collective opinion: "Paradox 2.0: 'Finally, somebody got it right.' We, too, think that Ansa has gotten it right, making Paradox 2.0 as easy to learn (on a LAN and as a stand-alone) as the current technology permits. We rate it excellent in ease of learning."

## EASE OF USE:

Paradox was a delight to use, both as a stand-alone product and from a LAN server. The main menu's command categories were meaningful rather than cryptic. Our only complaint about the menus is a minor one: The report submenus are a bit long, with so many commands necessarily available for producing reports that it was daunting to some of our testers.

The combination of a full set of menus and a full set of function keys means that both novices and experts can be accommodated. As you become more experienced, the program's interface doesn't get in your way.

Using other programs with Paradox was a snap because the DOS Big command (similar to the To DOS command), which allows you to suspend Paradox, run another program, and return to Paradox instantly at the point where you left off. Paradox when suspended uses 100K.

Network access is transparent with Paradox. Compared to the other LAN databases that we've reviewed, Paradox is now our ease-of-use leader by a slight margin over Dataflex. Despite the length and complexity of some of the menus in Paradox 2.0, they never got in our way when working. You'll find yourself using Paradox 2.0 for all kinds of things that would simply be too hard to do on other databases. We rate its ease of use excellent.

## ERROR HANDLING:

Paradox 2.0 handled most error conditions gracefully, returning an informative message to the screen. Complete descriptions of the messages, found in the

manuals, further support rational error handling. As you might expect, physical disruption of the network could cause Paradox 2.0 to lose data, but the automatic resource-checking mechanisms built into the program help minimize these losses.

Overall, Paradox was about as well-behaved as any local area network database that we have tested. Its error prevention, handling, and recovery mechanisms were on a par with Dataflex 2.2, while its error messages were generally clearer. While not perfect at preventing a data loss or a corrupted table, Paradox's error handling still far exceeded what we'd consider satisfactory in this important category. We rate error handling very good.

## SUPPORT:

Ansa's support programs for Paradox proved to be well above average. Paradox 2.0 is not copy-protected (although each network pack is electronically limited to six simultaneous users). Paradox 2.0 comes on both 5¼- and 3½-inch disks, a definite convenience. Ansa warrants Paradox to perform as described in the documentation, an unusual warranty provision.

Besides standard customer telephone support (not toll free), Ansa offers a special multiuser hot-line program, which costs an extra \$195 per year, but provides a toll-free number and the services of a dedicated multiuser Paradox specialist for unlimited calls. We're not sure if you'll need this special hot line, though, since Ansa's regular customer support is well handled on their LAN questions without a hitch. Subscribers to the multiuser hot line also receive free copies of Ansa's Tech Notes. Included with the program is a sample issue of the monthly *Paradox User's Journal* newsletter.

Ansa offers a nice upgrade policy for owners of Version 1.1. If you bought Version 1.1 between April 18 and May 18, 1987, you get the upgrade for free. If you bought Version 1.1 before April 18, you pay \$139 if you register by July 1, or \$199 thereafter.

The support effort from Ansa is comprehensive, and its free services are genuinely useful, earning it a support score of very good.

## VALUE:

Paradox 2.0 costs \$725 for a single-user version and \$995 for a network pack that allows six simultaneous users. Compared to the cost of a single-user Dbase III Plus (\$695) and Rbase System V (\$700), Paradox's single-user version is reasonably priced.

Paradox becomes a bargain for local area network users. At a cost of \$995 for a network pack of six users, you pay \$166 per workstation. This is considerably cheaper than some of the other multiuser local area network databases that we've recently reviewed, which range up to \$487 per workstation. (See May 25 Product Comparison of multiuser databases for Unify, Informix/SQL, Revelation, and Dataflex. Also see 10Base review, May 25.)

Paradox 2.0 is less costly than much of its competition, and it is easier to learn and use than all of its competition, while still retaining an impressive level of features and performance. That stacks up to a very good rating for Paradox 2.0's value.

Don Crobbs is the director of undergraduate computer science instruction at the University of Chicago and a contributing editor of InfoWorld.



## 35mm Express

# Graphics Product Excels In Slide Making Capacity

By Don Z. Melloch Review Board

The latest update of 35mm Express is a major improvement over its predecessor. One of the biggest changes in this popular program, which lets you develop presentation quality visuals such as 35mm slides, overhead transparencies, and prints — is that it now supports EGA. So, if you have an EGA system, you can now see on-screen what your color output will look like.

35mm Express is good at a lot of things, but it excels as a slide making program. Its handy built-in communications module makes it easy to send your work to high-resolution slide making services.

### FEATURES:

35mm Express generates a variety of business chart styles, including bar, line, area, table, pie, and word charts. You can then enhance those charts with the program's drawing module.

The user interface is a series of icon-based menus from which you bring in windows and forms. From the forms, you select colors, fonts and font sizes, chart types, output devices, and other options.

The first time you run the program, you select the output and input options. Windows appear that offer you a form for date and time. The exit icon takes you back to the main editing menu.

35mm Express comes with a library of more than 100 symbols; more libraries will be available from the vendor. In addition, you can pull in data from Lotus 1-2-3 and Symphony. 35mm Express lets you place two charts on one screen. The program offers two text fonts in nine sizes.

35mm Express requires an EGA, CGA, or Hercules graphics card. (The Hercules support is also new to Version 4.0.) EGA is in full color; CGA displays in black and white. Using a form provided in the program, those with a CGA or a Hercules monochrome display can output color slides and hard copy by assigning colors to the elements — regardless of the color limitations of the display.

If you have an EGA or CGA system, you can send output to the Plotaid Palette and Palette Plus image recorders. You can also make slides using the Bell & Howell Color Digital Imager IV with the Quintar 1080 or Graphport color graphics display controller. A printer option lets you automatically convert colors to patterns for output on a non-color printer.

With all boards, you can produce slides through the Magicorp Network of slide production centers (a Hayes com-

patible modem is required). 35mm Express comes with a coupon entitling you to a 50 percent discount off your first

order, as well as free overnight delivery. Also available is a third-party driver that lets you use some 25 other slide services throughout the United States and Europe.

35mm Express also supports IBM- and Epson-compatible graphics printers, Postscript laser printers, and the Hewlett-Packard LaserJet Plus and LaserJet Series II laser printers. A spokesman said the firm is developing drivers for the Xerox

4020 color ink-jet printer, the Calcomp Thermal printer, and for HP plotters. Also under development is an add-on that will let you make on-screen slide presentations.

For input, you can use the keyboard or other input devices, such as the Microsoft or Mouse Systems mouse, the Kurta Penmouse, or the Kurta Series Two or Summagraphics data tablets. You can have two input devices — such as a mouse and

a tablet — installed simultaneously, and you can switch between them.

You can order special versions of the program for the AT&T Video Display Controller, for the AT&T Display Enhancement Board, and for a number of laptop units that require the 3½-inch disk.

The program is supplied on 10 disks, although you probably won't need to install all of those (some of the disks have drivers

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With all this praise and all these incredible features, you'd expect MemoryMate to cost a lot more than \$69.95. But it doesn't.

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☐ **I'M SOLD.** Send me the MemoryMate program for \$69.95 plus \$3.00 shipping. CA res. add 6% sales tax.

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DAYTIME TELEPHONE \_\_\_\_\_  
☐ Check/Money Order ☐ Visa ☐ MasterCard ☐ American Express  
Expiration Date \_\_\_\_\_ Signature \_\_\_\_\_  
(415) 492-3500 Mail your order to:  
8 a.m. - 5 p.m. PST P.O. Box 12947, San Rafael, CA 94913-2947  
Allow 4 weeks for delivery. Demo disk offer good while supplies last. 3/19/87

\*MemoryMate was previously self-published by Proport Software, and called Instant Recall. Proport is a registered trademark of 3M. MemoryMate is a trademark of Broderbund Software, Inc. © Broderbund Software, Inc., 1987.



# THE FORTUNATE 300.

ANCHORAGE, AK		MELBOURNE-TITUSVILLE, FL	
1. BIRMINGHAM, AL	39.	77. MIAMI, FL	115.
2. HUNTSVILLE, AL	40.	78. ORLANDO, FL	116.
3. PHOENIX, AZ	41.	79. SARASOTA, FL	117.
4. TUCSON, AZ	42.	80. TAMPA-ST. PETERSBURG, FL	118.
5. ANAHEIM-SANTA ANA, CA	43.	81.	119.
6.	44. SAN JOSE, CA	82.	120.
7.	45.	83. W. PALM BEACH-BOCA RATON, FL	121. LAWRENCE-HAVERHILL, MA
8.	46.	84. ATLANTA, GA	122. LOWELL, MA
9.	47.	85.	123. SALEM-GLOUCESTER, MA
10. BAKERSFIELD, CA	48.	86. AUGUSTA, GA	124. SPRINGFIELD, MA
11. FRESNO, CA	49.	87. HONOLULU, HI	125. WORCESTER, MA
12. LOS ANGELES-LONG BEACH, CA	50. SANTA BARBARA-SANTA MARIA, CA	88. DES MOINES, IA	126. BALTIMORE, MD
13.	51. SANTA CRUZ, CA	89. AURORA-ELGIN, IL	127.
14.	52. SANTA ROSA-PETALUMA, CA	90. CHAMPAIGN-URBANA-RANTOUL, IL	128. PORTLAND, ME
15.	53. STOCKTON, CA	91. CHICAGO, IL	129. ANN ARBOR, MI
16.	54. VALLEJO-FAIRFIELD-NAPA, CA	92.	130. DETROIT, MI
17.	55. BOULDER-LONGMONT, CO	93.	131.
18.	56. COLORADO SPRINGS, CO	94.	132.
19.	57. DENVER, CO	95.	133.
20.	58.	96.	134. FLINT, MI
21.	59.	97.	135. GRAND RAPIDS, MI
22.	60. BRIDGEPORT-MILFORD, CT	98.	136. KALAMAZOO, MI
23. MODESTO, CA	61. DANBURY, CT	99.	137. LANSING-E. LANSING, MI
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25.	63.	101. LAKE COUNTY, IL	139. MINNEAPOLIS-ST. PAUL, MN
26.	64. NEW HAVEN-WEST HAVEN, CT	102. PEORIA, IL	140.
27.	65. NEW LONDON-NORWICH, CT	103. SPRINGFIELD, IL	141.
28.	66. NORWALK, CT	104. FT. WAYNE, IN	142.
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33.	71.	109. WICHITA, KS	147. CHARLOTTE-GASTONIA, NC
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35. SAN DIEGO, CA	73.	111. LOUISVILLE, KY	149. RALEIGH-DURHAM, NC
36.	74. WILMINGTON, DE	112. NEW ORLEANS, LA	150. MANCHESTER, NH
37.	75. FT. LAUDERDALE-HOLLYWOOD, FL	113. BOSTON, MA	151. NASHUA, NH
38. SAN FRANCISCO, CA	76. JACKSONVILLE, FL	114.	152. PORTSMOUTH-DOVER-ROCHESTER, NH

ATLANTIC CITY, NJ			COLUMBIA, SC	
153. BERGEN-PASSAIC, NJ	190.		227. GREENVILLE-SPARTANBURG, SC	264.
154.	191.	POUGHKEEPSIE, NY	228.	265.
155.	192.	ROCHESTER, NY	229.	266.
156. JERSEY CITY, NJ	193.		230.	267.
MIDDLESEX-SOMERSET-HUNTERDON, NJ	194.	SYRACUSE, NY	231.	268.
157.	195.	UTICA-ROME, NY	232.	269.
158. MONMOUTH-OCEAN, NJ	196.	AKRON, OH	233.	270.
159.	197.	CINCINNATI, OH	234.	271.
160. NEWARK, NJ	198.	CLEVELAND, OH	235.	272.
161.	199.		236.	273.
162.	200.	COLUMBUS, OH	237.	274.
163. TRENTON, NJ	201.	SPRINGFIELD, OH	238.	275.
164. ALBUQUERQUE, NM	202.	TOLEDO, OH	239.	276.
165.	203.	OKLAHOMA CITY, OK	240.	277.
166. LAS VEGAS, NV	204.	TULSA, OK	241.	278.
167. ALBANY-SCHENECTADY-TROT, NY	205.	EUGENE-SPRINGFIELD, OR	242.	279.
168.	206.	PORTLAND, OR	243.	280.
169. BINGHAMTON, NY	207.		244.	281.
170. BUFFALO, NY	208.	SALEM, OR	245.	282.
171.	209.	ALLENTOWN-BETHLEHEM, PA	246.	283.
172. NASSAU-SUFFOLK, NY	210.	ERIE, PA	247.	284.
173.	211.	HARRISBURG-LEBANON-CARLISLE, PA	248.	285.
174.	212.	LANCASTER, PA	249.	286.
175.	213.	PHILADELPHIA, PA	250.	287.
176.	214.		251.	288.
177. NEW YORK, NY	215.		252.	289.
178.	216.		253.	290.
179.	217.		254.	291.
180.	218.		255.	292.
181.	219.		256.	293.
182.	220.	PITTSBURGH, PA	257.	294.
183.	221.		258.	295.
184.	222.		259.	296.
185.	223.	SCRANTON-WILKES BARRE, PA	260.	297.
186.	224.	YORK, PA	261.	298.
187.	225.	PROVIDENCE, RI	262.	299.
188.	226.		263.	300.

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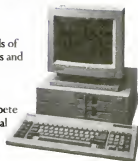
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## For people who need a lot of storage now...

Introducing the DISC DATA MANAGER™ from Seagate. The high-capacity storage subsystem that expands module by module to meet your changing needs.

Since you choose the capacity, you never pay for more storage than you need. Yet, affordable growth is there when you need it.

The DISC DATA MANAGER is a SCSI subsystem that provides compatible storage for many environments. Including PC-DOS\* and Novell's popular Advanced Netware\*.

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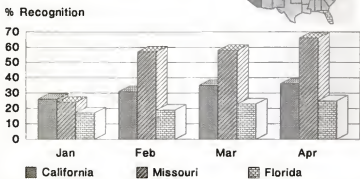
But this is just half the story.



**Seagate**

### Marketing Study

Result of Coupon Promotion



The map in this table comes from 35mm Express' symbols library. The program also is able to produce the three-dimensional effect for the chart, another bonus.

for output devices that you might not have). You'll probably want a hard drive for this program, but a batch file is included for simplifying use on a system with two floppy drives.

#### PERFORMANCE:

Stunning is the best way to describe the speed and efficiency with which 35mm Express performs its tasks. Screen redraws were almost instantaneous on our IBM PC with CGA.

The draw feature lets you edit and enhance a chart, add library symbols, type or resize text, and remove or add objects by groups. 35mm Express now has a zoom feature, which lets you accurately edit your drawing in a small area. You can also create rectangles, polygons, lines, ellipses, and curves. And you can now embed Bezier curves in polygons.

A plus to this program is that you see what you're doing as you do it. If you don't like the placement of a line of text, or if you want to move it, copy it, or place it in front or in back of an object, you place the arrow on the text (or object) and select the command. Then you move the selection cursor (now in the shape of a large arrow) and position it where you like, press enter, and the move is made. The program redraws the area so much faster than other programs that it's a joy to watch. Another improvement in Version 4.0 is that you can now see your actual text on-screen; previously, you saw only a rectangle indicating where the text would go.

To exercise the Magicorp slide making service, you select the Magicorp option and then fill in the necessary name, address, and telephone information forms. These are attached to your transmission so that Magicorp knows what you want and to whom the order should be billed. On other forms you specify whether you want slides, color prints, or transparencies, the number of each, and the turnaround time (rush or normal). If you use a driver supplied by a local slide service, its driver icon will appear on your menu.

There is an easy way to enter bps rates, Com ports, and so on. When everything is set and you return to the Magicorp menu, the transmit file is activated. You select it when you're ready, and you're returned to the file folder to highlight which files to send. The program will dial the number, send the file, check to ensure that the file arrived intact, and retry if a problem arises. Your high-resolution slides (4,000 horizontal lines) should appear on your

desk the next day.

Slide making prices may vary among vendors, but you're assured top quality and professional visuals whether you're ordering color or black and white hard copy, overhead transparencies, or 35mm slides. Remember, though, that the Bell & Howell and Polaroid Palette Plus image recorders supported by 35mm Express do not have as high a resolution as those that are generated by the slide services.

Because of the quality of its output and its speed of operation, we rate 35mm Express a very good performer.

### INFO THE NEWS WEEKLY

#### REPORT CARD

SOFTWARE  
35MM EXPRESS

7.9

	Unacceptable	Poor	Satisfactory	Good	Very Good	Excellent
Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ease of Learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

#### SUMMARY

Top-notch product that designs presentation graphics and generates them as 35mm slides, overhead transparencies, or hard copy. For the IBM PC. Not copy-protected. Pros: Easy to learn and use; fast WYSIWYG displays; flexible editing. Cons: No on-screen color with CGA; limited number of fonts; limit of two charts per page.

#### PRODUCT DETAILS

List price, \$695. Version tested (4.02) for IBM PC, XT, AT, and compatibles. Requires 256K of RAM; PC- or MS-DOS 2.0 or later; two floppy drives or hard drive; EGA, CGA, or Hercules monochrome. Mouse or digitizing tablet recommended. Business & Professional Software Inc., 143 Binney St., Cambridge, MA 02142; (800) DIAL-BPS or (617) 491-3377.

## DOCUMENTATION:

Color examples are among the thoughtful and helpful portions in the 35mm Express manual. The loose-leaf volume has six tabbed sections plus a separate short booklet with installation procedures and program requirements.

The manual includes a detailed table of contents and index, and an appendix with a good reference section. There's a well-illustrated "easy start" tutorial for each type of chart. On-screen support is logical and at your fingertips when you need it. The help menu is top-notch.

We rate documentation excellent.

## EASE OF LEARNING:

Installation proceeds smoothly. On-screen prompts ask which peripherals you use. You're then directed to insert the disks your equipment requires.

Entering data in the first form provided can give a twitch of trouble until you realize that you must choose the chart type before you can enter or import data. But going through the tutorials will quickly provide you with the routines you need.

The many layers in the menus require delving; sometimes the function is there, but you don't know it because it's three levels down. However, when you're not sure if or where a function exists, you can usually discover the answer in the manual's index. We rate ease of learning very good.

## EASE OF USE:

Whether you use keyboard, mouse, or digitizing tablet, 35mm Express is easy to use. Because of the windows, icons, and help menus, you could probably find your way through most menus without consulting the manual.

Using your input device or pressing your keyboard's arrow keys moves you quickly among the option icons. You can also type the first letter of the command, a nice timesaver. The program highlights and defaults to the icon you're likely to use first in any menu. In the main menu, the create/edit icon brings up a drawing of a file cabinet folder and the request for a new name. This is followed by the input form, which resembles the inside of a folder. This is where you enter chart titles and data. The top of the file folder has headings for the file part, name, date, length, status, and so on.

In the form menu, each line you type appears in a one-line box at the top of the screen. You can double-check it for accuracy before entering it onto the chart. You can easily edit data or text within a cell, and you can insert, delete, or blank a row or column, or import a Lotus worksheet.

If you have an EGA board, the color

selection appears on-screen when you select colors, but if you have a black-and-white display or a CGA system, you have to guess how the colors will look on a slide. Examples in the reference section provide some help.

Other PC graphics programs have clumsy interfaces that require moving the cursor on the screen in a protocol as stiff as a crinoline skirt. 35mm Express has a speedy redraw, and you can edit both in the form and on the preview screen. It's a truer WYSIWYG than many programs that claim that feature. We rate ease of use excellent.

## ERROR HANDLING:

You sometimes find text missing on preview screens. This happens when a color doesn't show up on the screen, for instance when you choose a black title on a black screen. We found the simple solution in the manual: Change the color.

Although there is neither an Undo nor an Autosave feature, we were prompted to save data at all the important times, and we never lost any data. We rate error handling very good.

## SUPPORT:

Company support is available free to registered users from 9 a.m. to 5 p.m. Eastern time. (Calls are toll-free.) Our three calls to support were answered promptly by a knowledgeable support technician. For an extra \$250, you can buy the vendor's priority support program, which entitles you to quicker handling of your phone calls, new output drivers for free, a newsletter, and 15 percent savings on new symbol libraries.

35mm Express comes with a 30-day money-back guarantee. In addition, the program is not copy-protected, and the vendor will replace defective media. Because of the good phone support, the toll-free line, the 30-day warranty, and the lack of copy protection, we rate support excellent.

## VALUE:

Although 35mm Express' \$695 list price sounds high, we believe the program's features justify it. 35mm Express is faster and easier to use than most others and it gives you terrific telecommunications, as well as charting, graphing, drawing, and slide making all in one program.

We haven't yet seen the one graphics program that does everything superbly. But 35mm Express excels as a slide making program, and those looking for a graphics/slide making program will find it a good value.

Dana Z. Meiloch is the author of *Dynamics of Presentation Graphics* and numerous other computer books.

## ...and a lot more in the future.

With the DISC DATA MANAGER, you can add more disc drives as your need for storage grows. Adding one or more drives gives you a capacity range from 160 MB to over 1 gigabyte.

Using multiple drives, you can perform overlapping operations. Or back up important files on separate drives. There's even an optional 40 MB tape drive for archival storage.

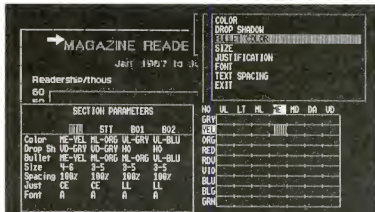
Best of all, the DISC DATA MANAGER is made by Seagate, the people who have built reliable performance into more than 6 million 5¼" hard disc drives.

For more information on the storage subsystem that grows with you, call us. 800-468-DISC. Ask for Tim.



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**Seagate**



Menus in 35mm Express are in the form of windows. Here, one window selects options for picture elements; another selects colors and intensities.

# Mega

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area of Sunnyvale, Calif., have  
are luring new tenants with  
comprehensive child care  
has the highest vacancy  
David Jones of Jones &  
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high-tech areas is being

# MegaScan

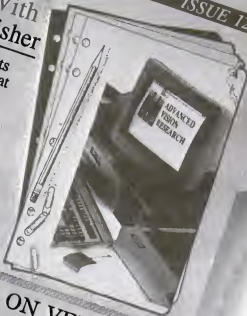
VOLUME 1

NEWS

ISSUE 12

MegaScan Now  
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Ventura Publisher

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own pull-down menu that  
operates from within  
Ventura Publisher.  
MegaScan is the only  
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and print while operating  
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# Scan. DOS Desktop Publisher

It's no contest.

Nobody, not Apple\*, not HP\*, not even IBM\*, offers a desktop publishing system that blazes through internal house organs faster than MegaScan.

For one, MegaScan allows you to scan anything on paper into your computer. Words. Pictures. Drawings. Charts. Graphs. Business cards. Brochures. Anything.

In an incredible 9 seconds.

Then you edit. Compose.

And send the final image to your laser printer for near-typeset quality results. Giving you a full page of 300 dots-per-inch text and graphics in just 10 seconds.

That's fast.

You can share results fast, too. MegaFAX™, our unique PC-to-PC, PC-to-FAX link, uses standard telephone lines to generate a FAX with unmatched clarity and grey-scale. MegaFAX looks better on any FAX machine that receives it, too.

Here's the real heart of the system. MegaBuffer.\* Our high-speed image manager interface that links our hardware and software into one completely integrated system.

Your image is scanned directly into MegaBuffer, eliminating the most time-consuming task

of all—reading and writing to the hard disk.

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PC Tex, Version 1.50f and Micro Tex, Version 1.5A1

Public Domain Code Basis for  
Powerful Typesetting Package

By Richard Goldstein Review Board

Donald Knuth of Stanford University took the "if you want something done right, do it yourself" maxim to heart. Dissatisfied with his book on algorithms came back from his publisher, he created his own mainframe program, Tex, to meet his expectations for typesetting.

This would be an ambitious undertaking for most anyone; Tex is not only a typesetter, but also a text formatter and programming language all in one. It's also enormously powerful. Imagine what it takes to get 240 dots per inch (dpi) from a 9-pin Epson printer. The irony is that, as often happens with programs that can take you most anywhere, Tex usually makes you take a longer route to get there — at least at first.

Knuth turned the Tex (pronounced "tek") code over to public domain, which explains why there are two versions for the IBM PC (and two more for the Macintosh). In fact, any vendor can take the code and produce a program, but the name "Tex" can only be used after passing a test which "certifies" the program as an acceptable version. In this review, we evaluate the IBM versions, Micro Tex from Addison-Wesley and PC Tex from Personal Tex Inc. The two are

nearly identical to each other in features and performance, their main differences being in documentation, support, and price.

## FEATURES:

Tex is a formatter, so you'll need your own editor to work with these programs. Any editor or word processor will work, so long as it can produce 7-bit (plain) ASCII files.

As a typesetter, Tex produces very high-quality output — due to its complete document control. It takes over the task of aesthetically designing a document from those of us who never got beyond conceptualizing figures as sticks in drawing class, let alone developed the ability to break up the grey on a page, but it still allows the user the flexibility to change anything at any time.

Tex has very strong opinions about the looks of documents, which greatly eases one burden on the user: You no longer have to make split-second format decisions as to make do with a traditional word processor.

Control starts with the individual character controls that follow traditional typesetting methods. For example, traditional typesetters do not use the double quotation marks on the PC keyboard, so Tex doesn't either. Instead, you hit the single quotation key twice. You end up with traditional left and right quotation marks like those in books or magazines.

Tex also understands the difference between text typesetting and math typesetting. In math mode, typeset characters are italicized as they would be in math books.

Other typesetting features are built in, including ligatures and kerning. Ligatures are combinations of characters treated as a unit because they look better when typed together. ("if" and "fi" are examples.) Kerning is a method of providing proportional spacing; it shrinks the space between certain combinations of characters that look odd when spaced normally. (For example, the combination "AV" looks much nicer with kerning.)

Tex also uses sophisticated typesetting methods such as the correction factor, which makes subtle adjustments to text in complex situations. (For example, when a line of text includes italicized characters, it makes adjustments to proportional spacing and kerning.)

Tex completely controls lines, paragraphs, and pages, trying to make each of these look as good as possible. For example, Tex doesn't prohibit undesirable characteristics such as widows and orphans (single lines of paragraphs left dangling on a page) or hyphens at the ends of three consecutive lines. Instead, Tex assigns these all "penalty" values, ranging from zero to 10,000, then it finds the format with the lowest total penalty. If you don't like the outcome, you can either correct your formatting or change the penalty values.

Tex drivers come with numerous fonts (there may be 16 or more different font styles) and each font comes in up to six sizes. Also, Tex has excellent hyphenation algorithms, which are specialized of hyphenating differently depending on word usage.

With Tex, you embed codes in your file, to see the results of all these fancy typesetting abilities, you must turn to Tex's previewer, a separate program that displays what the page will look like when printed out.

All this consumes plenty of space on your system; even if your printer has enough memory to hold the fonts (over 1 megabyte), the program itself takes over 1 megabyte. We found that with a dot-matrix driver for the Toshiba, PC Tex took about 3.5 megabytes, including the program, three macro packages, the previewer, and the printer driver with fonts. Micro Tex took more than 5 megabytes.

As with any other programming languages, using the codes can be hell. Macro packages ease your way, and there are a number designed specifically for Tex packages. Some are included with each version of Tex. Both versions include the Plain Tex package written by Knuth, but PC Tex also includes LA Tex and Ams-TeX.

Going beyond  
default documents  
takes you into  
deep water, but  
the more time you  
spend with Tex,  
the more you'll  
learn.

Knuth's book is also provided it is probably too difficult for most beginners to start with. Learning Micro Tex, then, requires quite a bit of work.

The PC Tex manual, on the other hand, provides quite a lot, including a number of excellent, easy to follow, lessons. However, Tex's complexity puts great strain on your documentation.

If you get PC Tex, get Knuth's book. Everything needed is there and is usually understandable; but give yourself more time than you would for a standard word processor. If you intend to use the LA Tex macro package (which is much easier than Plain Tex) then you need its manual, and the same goes for Ams-TeX. Unfortunately, although PC Tex includes the Ams-TeX package, its manual discusses it only in the appendix and does not include the separate book.

PC Tex gets a very good for documentation because the material that comes with it is so clear. Although Micro Tex supplies the Textbook, there is no separate guidance for the beginner, so it earns a good rating.

## EASE OF LEARNING:

As installed, you can immediately use Plain Tex macros to help produce nice documents. Going beyond simple, default documents takes you into deeper water, but the more time you spend with Tex, the more you'll learn. If you want to learn everything at once you'll be in trouble; if you ease into the programs, you should have no problems despite their size and complexity.

Tex's commands for both special characters and traditional formatting are

**INFO WORLD** THE NEWS WEEKLY  
REPORT CARD

SOFTWARE  
**PC TEX**

**8.5**

Unacceptable	Poor	Satisfactory	Good	Very Good	Excellent
Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ease of Learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## SUMMARY

Personal Tex's PC version of the Tex typesetting package. Not copy-protected. *Pros:* Offers complete control over output; superior documentation; Plain Tex, LA Tex, and Ams-TeX macro packages; user bulletin board; money-back guarantee. *Cons:* Very complex extra-cost add-ons recommended; requires lots of hard drive space.

## PRODUCT DETAILS

List price: Standard, \$249; with printer driver, \$325. Version tested (1.50f) for IBM PC and compatibles with 475K RAM and DOS 2.0 or later. 10MB hard disk recommended. Options: Previewers, \$125-\$175; additional dot-matrix drivers, \$95; laser drivers, \$195-\$225. Personal Tex Inc., 12 Madrona Ave., Mill Valley, CA 94941; (415) 388-8833.

**INFO WORLD** THE NEWS WEEKLY  
REPORT CARD

SOFTWARE  
**MICRO TEX**

**8.3**

Unacceptable	Poor	Satisfactory	Good	Very Good	Excellent
Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ease of Learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## SUMMARY

Addison-Wesley's PC version of Tex typesetting package. Not copy-protected. *Pros:* Offers complete control over output; one macro package; money-back guarantee. *Cons:* Very complex, extra-cost add-ons recommended; requires lots of hard drive space; no lessons.

## PRODUCT DETAILS

List price: Standard, \$295; with Epson/IBM 9-pin driver, \$369.95; with laser driver, \$495. Version tested (1.5A1) for IBM PC and compatibles with 512K RAM, DOS 2.0 or later (640K required for previewer). Hard disk recommended. Options: Previewer, \$100 with Micro Tex, \$250 without; LA Tex macro utility, \$44.95. Addison-Wesley Publishing Co., Jacob Way, Reading, MA 01867; (617) 944-6795.

## PERFORMANCE:

Tex has more formatting power than anything we've seen up to now from a PC-based typesetting package. The only formatting capability that is not present is the sorting routine needed for indexing. However, LA Tex and other macro packages include indexing features.

Not only is there enormous formatting capability, but your way is eased by reasonable defaults, style sheets, and macros. You may even build and compile your own macro package if you want. More importantly, Tex's format commands usually produce very pretty output, and most are easy to change.

Formatting here refers to the rules followed to structure individual elements of a document, including lines, paragraphs, pages, and other elements designed to ease the way of the reader. These include line numbers and footers; footnotes (or endnotes); automatic numbering of equations, tables, and paragraphs; chapters; floating text and tables; tables of contents; and lists of figures. Technical material is put into a special math mode, which automatically formats equations differently from normal text.

As already mentioned, Tex can produce an output of 240 dpi with a standard 9-pin dot matrix printer, and it works with laser printers to produce even more stunning results.

This enormous flexibility and customizability, combined with the beauty of the resulting output, earn Tex an excellent in performance.

## DOCUMENTATION:

The Micro Tex manual is very brief (about 36 pages including the index) and really could be more complete in providing guidance. Most instruction is focused on interaction with DOS, and although

easy to remember because, basically, you spell them out. For example, the "beginchapter" command should be no mystery. In other typesetting packages—for example, Format by Shantha Software (reviewed April 20)—you issue the same command with a more obscure code. In Tex, you'll have less trouble remembering commands, but they are also more cumbersome.

There are six multiple modes in Tex that you have to remember to open and close. If you switch to math mode to type an equation, you must remember to switch back to text mode when you're

## Tex's extensive log file makes it easier to find and fix formatting errors.

through, otherwise all your text will be printed in the italics that distinguishes math problems. And of course, you won't know if you've made a mistake until you switch into the previewer. This is particularly important since some commands mean different things in different modes.

Both packages see the user through even this level of complexity with defaults that allow you to get started right away. For that, we rate Micro Tex good in ease of learning. PC Tex comes bundled with three macro packages, and its documentation includes some lessons, earning it a very good in ease of learning.

### EASE OF USE:

Tex can do many things that give traditional word processors trouble, including symbolic cross-references, kerning, and leading. Many of these are accomplished quite easily with Tex, at least partly due to the existence of modes.

But multiple modes have disadvan-

tages that place heavy demands on the user. Not only do commands mean different things in different modes, but also some commands mean different things depending on what part of the document they appear in. When "span" appears in a table formatting command, for example, it causes the text taken to be expanded. In other situations, "span" causes table columns to be combined.

The disadvantages of modes is one example of the heavy demands placed on the user by the enormous power and flexibility of Tex.

Tex has 300 primitive commands. The "Plain" package adds about 600 commands and the Ams-Tex package includes all those in the Plain package plus more. Luckily, you can produce complicated, good-looking documents using only a fraction of these commands.

Formatting and printing a document is a relatively slow process, at least partly because of the great power of the formatter. On our Test Center's Epson FX printer, it took 12 passes per line to achieve 240 dpi.

The vast majority of Tex's commands can be ignored except when you are very picky about the looks of your document.

An extensive macro ability and the existence of "style sheets" also greatly ease your way and earn PC Tex and Micro Tex both very good ratings in ease of use.

### ERROR HANDLING:

We were unable to make Tex lose any material. No problems were found with memory-resident programs, including public domain keyboard and screen drivers.

It is easy to make formatting errors, but Tex's extensive log file makes it easier to find and fix them. However, as happens with any other "compiler," error messages may only reflect the point where the problem was noticed, and this may not be near the cause of the problem. You can turn on a number of special tracing operations to get even more information; this may help locate the source of the problem.

Tex has no known bugs. Knuth has a standing offer of a monetary reward to

### WORDSTAR ON THE EPSON FX-86e PRINTER

This is a short sample to show the difference between PC TEX and a standard Wordstar file printed on the Epson FX-86e. This paragraph is flush left and shows the appearance of bold face type.

This paragraph is indented. It contains the math formula  $x^n = x^n + y^n$ . Notice that the "x" in a math equation is the same as the "x" in text.

There are no ligatures, "ff", "fi", or kerning. Wordstar does allow for right margin justification.

### PC TEX ON THE EPSON FX-86e PRINTER

This is a very short sample, to show some of the features of PC TEX. This paragraph starts flush left, and shows the appearance of bold face type. Bold and slanted text are not available.

This paragraph is indented. It contains the math formula  $x^n = x^n + y^n$ . Notice that the "x" in math mode is different from the "x" in text mode.

TEX allows you to print out symbols like §, ¶, and ©. Typetting features like ligatures, "ff", "fi", kerning, and leading are all built in to TEX.

PC Tex offers more flexibility and better output than a standard word processor such as Wordstar. For example, equations are automatically formatted differently from text.

anyone who finds a bug in his code.

PC Tex and Micro Tex both earn excellent ratings in error handling.

### SUPPORT:

Little user support is provided. Both vendors will help with installation, but neither will answer questions related to general Tex commands and macros or to public domain utilities such as LA Tex and Ams-Tex. PC Tex does have a bulletin board for users.

There is an international Tex user group with an excellent newsletter. However, any organization that wants to use Tex should plan on having its own consultant available.

Micro Tex warrants its media for 90 days and offers a 60-day money-back guarantee. PC Tex offers a 30-day money-back guarantee. Neither is copy-protected.

Both PC Tex and Micro Tex earn satisfactory scores in support.

### VALUE:

The list price of PC Tex is \$249; Micro Tex costs \$295. For either program you will want a screen previewer (from \$125

to \$175), and you will almost certainly want a driver for a better printer (from \$95 to \$225). For \$325, you can buy PC Tex bundled with 9- or 24-pin Epson/IBM or Toshiba dot-matrix drivers. You may also want the program for designing new fonts (Metalfont, \$195 from PC Tex). And, of course, you will need an editor.

Format comes with a screen previewer and all available printer drivers for \$400, which is less expensive than Tex. But Tex will produce superior results, provided you have a printer to keep up with it.

With all the necessary attachments, each version of Tex will cost \$600 to \$700 with only one printer driver. For this you get an enormous range of features and the ability to use the same program on machines from Macs to minis to mainframes.

This combination makes both Micro Tex and PC Tex very good values.

Richard Goldstein does statistical analysis and microcomputer consulting for the development of statistical software and databases. He is active in the Boston Computer Society.

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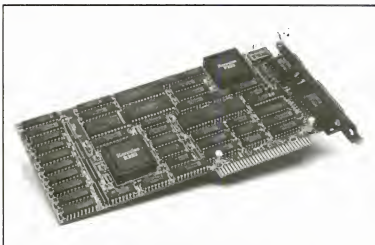
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For Lotus 1-2-3 users, the In-Color Card gives you up to 90 columns by 35 rows, or about 85 percent more characters on-screen than usual. You can also inset in one corner of the worksheet a Lotus chart of 320 by 200 dots (about a quarter of the screen).

ent characters in 16 colors (you get more characters if you use fewer colors, up to 12,000 characters with two colors). Character height can vary from four to 16 pixels, and width can be changed from eight to nine pixels, so characters can be used in combination to build text-based graphics displays. How you print these depends on whether the application vendor has created the appropriate printer driver for your printer; likewise, if you use the Hercules editor to create custom characters of your own, you'll have to patch your printer driver to match.

Yet the card isn't particularly well-suited for desktop publishing. These fonts aren't sized and shaped in the same way as typographer's fonts. And because the screen's pixels aren't square at this resolution (and a laser printer's are), you won't get on paper what you see on screen.

For 1-2-3 users, RAM Font mode gives you up to 90 columns by 35 rows, or about 85 percent more characters on the screen than usual. You can also inset in one corner of the worksheet a Lotus chart of 320 by 200 dots (about a quarter of the screen). You can instantly switch the graph to full screen at full Hercules resolution.

To see the In-Color Card in action, we used Microsoft Word 3.1 on an 8-MHz/one-wait-state AT. Word 3.1, if started in character mode, automatically makes use of the 4K RAM Font if it's present. Then you can see true boldface, underlining, and italics just as if you were running in graphics mode. Only suddenly, Word seems as fast as Word Perfect. We timed arrow-key scrolling from top to bottom of a 30-page document in both RAM Font and graphics modes. It took 12 minutes in graphics mode — versus slightly over six minutes in RAM Font.

On the other hand, paint and draw programs that run only in graphics mode took no advantage of RAM Font and thus show no startling speed increase on the In-Color Card.

The only problem we found in operation was with the screen-blanking utility, which was incompatible with Word in graphics mode; it would blank the screen but would not let you recover.

Lately, we've been compensating for the slow operation of increasingly popular graphics programs by using faster computers and fancy graphics coprocessors. By figuring out a way to vastly expand the number of predefined characters, the Hercules In-Color Card presents another approach, one that is less expensive and perhaps more suitable for

certain kinds of operation.

The In-Color Card performs exactly as advertised. It greatly enhances the performance of certain applications, to an extent that no other card can. We rate it very good in performance.

#### DOCUMENTATION:

The documentation offers separate booklets on hardware (installation, switches, and technical information for special applications), software (the utilities and drivers), and compatibility (a software compatibility chart for several hundred products). They contain plenty of information for the programmer and techie. We'd rather see a single paperback that would be easier to find on the bookshelf. Aside from this, the writing is clear, and the information is complete and beautifully organized. Where appropriate, one finds complete indexes and tables of contents. In other words, the documentation is very good.

#### EASE OF USE:

With its three modes, the In-Color Card would be easier to use with a menu-driven configuration that lets you define display preferences for all applications by "pointing and clicking."

There is no CGA compatibility with this card. If you insist on CGA capability, you can run the In-Color card together with the Hercules Color Card (Model GB-200) — and only the Hercules Color Card. You can't have an In-Color Card in your computer at the same time as any other monitor card, including Hercules' own monochrome cards.

Since neither the In-Color nor its software "thinks for itself" when switching between applications, we can't say this card belongs at the top of the ease-of-use class. At least Hercules provides fine documentation, easily understood utilities, and a utility that remembers the mode various applications were set for. Therefore, it deserves a good in this category.

#### SETUP:

The Hercules In-Color Card has such complex options that installing and setting up the system is more complicated than with most video cards.

The card is considered a monochrome card by your PC, so you will have to set up your computer for monochrome display. There are no switches on the In-Color Card. All setup is done by running software drivers and utilities. The In-Color Card doesn't autowatch, but there's a utility called HGC that "re-

members" the appropriate mode setting for each program you've set up.

Installation procedures are different for each application program supported. Most require reinstallation of the program itself.

Software-specific drivers are provided by Hercules for 1-2-3, Symphony, Windows, Word, Autocad, Framework II, Javelin, and 35mm Express. Some of these are In-Color drivers and some are Unified drivers, which allow the software to run on either the Graphics Card Plus or In-Color card without reconfiguration. Significantly, there's no driver for GEM (or Ventura Publisher), though both will run in monochrome when configured for Hercules graphics. All other programs that run on the Hercules Graphics Card (or Plus) will also run on the card in monochrome.

The 48K RAM Font may be incompatible with text-mode memory-resident programs such as Sidekick. According to Hercules, results are "unpredictable."

The on-board parallel port, unchangeably configured as LPT1, can only be disabled by unplugging the appropriate chip. This will be a problem only if you have another card with the same ego problem.

We rate setup as satisfactory.

#### SERVICEABILITY:

The warranty is good for a full two years.

The RAM Font mode gives you graphics capability at text speeds by letting your software store up to 12,000 characters in special memory on the board.

If the card fails to perform to standards (barring user damage), Hercules will repair or replace it for free.

The lengthy warranty, Hercules' reputation for quality manufacturing, and a well-established dealer service network, earn the In-Color Card an excellent rating for serviceability.

#### VALUE:

The In-Color's \$499 list price competes with low- to mid-price EGA cards. You get a high level of graphics quality and speed for that price. The chief competitor for this kind of performance would be extended EGA (800-by-600- or 640-by-480-pixel resolution), which gives you correct aspect ratio for desktop publishing; but you'll need a faster machine to match the In-Color in text mode, and you'll also need a multisync monitor, not just an ordinary EGA monitor.

We consider the Hercules In-Color Card a satisfactory value for those who need its special capabilities.

*Ken Milburn is a small-systems consultant and former president of a San Francisco microcomputer systems house; he has installed a number of professional CAD systems.*

## ALR 386/2

# 386 Machine Has Fast Hard Disk System, Simple CPU

By Stephen Satchell  
Hardware Test Director

Advanced Logic Research Inc. introduced the Access 386 last year at fall Comdex; we reviewed it in our December 22, 1986, issue and gave it a good score.

When it came time to update the system, ALR decided not to tinker but to start from scratch and develop a completely new 386 system that is comparatively simple in design. The result is a system with the computing power you expect from the Intel 80386 CPU chip coupled with a hard disk system optimized for speed — all for under \$4,000.

#### FEATURES:

Within a case the size of the PC AT, ALR has built a straightforward 80386 system. The 80386 runs at 16 MHz with two wait states (competing systems are 16-MHz/one-wait-state). It also has a "compatibility" speed, 10 MHz. Our evaluation sample came with a 10-MHz 80287 math coprocessor; we could see that provisions had been made for an 80387 socket.

Instead of using fancy and expensive methods to improve the apparent speed of memory, the 386/2 uses 1 or 2 megabytes of 80-nanosecond 32-bit-wide dynamic RAM. This is a simple way to make a nice memory system at a relatively low cost. For a performance boost, the system copies the BIOS from ROM to a reserved area of RAM. Configurations that include hard disks generally come standard with 2 megabytes of RAM.

The basic system comes with a 1.2-megabyte floppy disk drive and controller. Unlike the PC AT and many other 286 and 386 systems, the floppy controller does not include a hard disk controller; that comes separately with your hard drive, taking up an extra slot. The floppy controller holds the serial and parallel ports. There are four 16-bit AT-style and two 8-bit XT-style slots on the system board. Two special slots take memory cards to add additional 32-bit RAM. A battery-powered clock/calendar completes the picture.

ALR's hard disk controller features full track buffering and support for 1-1 interleave. This puts the ALR system on a par with IBM's high-end PS/2 computers in speed. Our evaluation unit had a 40-megabyte drive; 40-, 80-, or 130-megabyte hard disks are available. ALR provides some interesting software with this machine. Diagnostics and a CMOS setup program head the list. Unlike a number of other systems, the ALR provides hard disk preparation software in case your hard disk requires it. Quarterdeck's expanded memory emulator uses the 386's paging hardware to provide high-speed EMS memory. (The vendor has announced a switch to Phoenix Technology's Control 386 memory manager September 1.)

No operating system is included with the machine; we used IBM's PC-DOS 3.30.



ALR's 386/2 computer uses 1 or 2 megabytes of 80-nanosecond 32-bit-wide dynamic RAM. The system copies the BIOS from ROM to a reserved area of RAM.

### PERFORMANCE:

The ALR 386/2 system avoids complicated and costly speedup schemes and so runs a little slower in CPU tests than some of its 386 rivals. What distinguishes this system is its zippy hard disk.

The ALR 386/2 comes near the bottom of the list of 386 systems we've reviewed in CPU performance; it's 12 percent slower than the Compaq 386. On the other hand, it's 12 percent faster than the fastest 286-based unit we've reviewed to date, which is also from ALR: the Dart 012. (See Product Comparison, July 27.)

The hard disk is what impressed us most about the ALR 386/2. The hard disk controller supplied by ALR supports I-1 interface, which means sequential access is as fast as it can possibly be, if the operating system and applications can keep up. Random access is in the range we've come to expect with 386 machines.

Our standard software suite only ran into problems we expect from a high-speed system: copy protection and the Crosstalk XVI speed bug. You can slow the system from the keyboard (or by batch file) to handle problem software.

We successfully tested Crosstalk XVI 3.6, Desview 1.30, Framework II 1.0 (copy-protected) and I.1 (not copy-protected), Lotus 1-2-3 1A and 2.01, PC Talk IIIc, Pro Yam 16.01, Reflex I.0, Sidekick 1.56A, Smartcom 2.1, and Windows 1.01.

We got our standard expansion cards working — Intel Above Board PS/AT, Hayes 1200B, and Fox Research 10-M LAN board. However, the system would

only work when we loaded each card individually. Based on our troubleshooting attempts and a discussion with ALR's technical support staff, we suspected a sample defect in the system board power or the power supply itself; a second unit we obtained from ALR showed no such problems. We believe the sample defect also accounts for some minor and unpredictable problems we experienced with the hard disk.

This system is FCC approved for a Class A computing device.

The ALR 386/2 tries no special tricks to boost computing power, but it relies on the built-in power of the 80386 to give you good speed and superior drive performance. The combination earns it a rating of very good in performance.

### DOCUMENTATION:

In our review of the Access 386, we noted that its documentation needed quite a bit of work. The manual for this version of the machine is a little better. The documentation still presumes a basic familiarity with PCs and DOS, leaving novices stranded; however, this system is unlikely to be a first choice for novices.

Experienced users will find it does a passable job of showing how to hook up and prepare the 386/2 for use. We liked the section describing options and their installation. Adding RAM and a math coprocessor is easy for those who are knowledgeable. The same section describes how to configure some of the operating characteristics for the system.

We rate documentation satisfactory.

### EASE OF USE:

Its power, especially its hard drive speed, would make the ALR 386/2 a good network file server. However, the key lock, while it physically secures the unit cover and electrically disables the keyboard, doesn't let the system restart automatically in the case of a power failure, a disadvantage in a file server.

The EGA monitor features a tilt-and-swivel base.

The system itself is quite easy to use, and there are no surprises or stumbling blocks. The ALR 386/2 earns a good rating for ease of use.

### SETUP:

Setting up the 386/2 hardware was an interesting chore. We had more problems than usual, but all were easily fixed (except the problems arising from the sample flaw) using the tools provided.

It took us about 45 minutes to get this system from its shipping cartons to a usable state. The hard disk proved to be unbootable, but the manual and supplied software made it possible to remedy this situation.

Almost all the configuration options are set using software. Some seldom-used options are set via DIP switches on the system board.

Four 16-bit and two 8-bit slots sound like enough, but we found that one 8-bit and two 16-bit slots are used for the hard disk controller, floppy controller, and EGA adapter, leaving one 8-bit and two 16-bit slots.

The two 32-bit slots — actually, two pairs of 16-bit slots working together — are used for the memory board supplied by ALR. Instead of having a special 32-bit slot as most other systems do, the ALR uses the two 16-bit slots working together to perform the same task.

There is room and there are power connectors for five half-height storage devices. The manual does not give instructions for adding such devices.

We found it easy to set up and configure the ALR 386/2, but the limited number of slots tempers its score to good.

### SERVICEABILITY:

ALR has improved serviceability since we reviewed the earlier model. The company has beefed up its technical support and added diagnostics.

The company offers a one-year limited warranty. You can take problems to your dealer or work with ALR's technical support to resolve the problem.

We found good mechanical design, good solder and assembly work, and no evidence of last-minute changes added to the circuit cards.

Technical support was a bit busy when we called for help, but our call was returned in about two hours. The indi-

### Prior Reviews Of 80386 Systems

American 386 Turbo (accelerator board)	June 15
ARC 386i	July 20
Compaq Deskpro 386	July 13 (update) Oct. 20, 1986 (full review)
IBM PS/2 Model 80	Aug. 3
Intel Inboard 386 (accelerator board)	May 4
Kaypro 386	June 1
PC's Limited 386	Aug. 3

vidual we spoke with showed a complete knowledge of the system and volunteered to replace our defective unit.

Good technical support, a reasonable warranty, and good construction add up to a very good score for serviceability.

### VALUE:

While one of the slowest 386 desktops we've reviewed, the ALR 386/2 has the lowest price. With 2 megabytes of RAM and a 40-megabyte hard disk, the ALR 386/2 costs \$3,990, including floppy and hard disk controllers. Acer and Shen Technology systems sell for about the same price in similar configurations.

A lot of computing performance for relatively little money is a good trade-off. The ALR 386/2 is a very good value.

Stephen Satchell, InfoWorld's director of hardware testing, has 15 years' experience as a systems designer and hardware product manager.

**INFO**  
**WORLD** THE NEWS WEEKLY  
**REPORT CARD**  
 PERFORMANCE COMPUTER  
**ALR 386/2**

7.3	Unacceptable	<input type="checkbox"/> Poor <input type="checkbox"/> Satisfactory <input type="checkbox"/> Good <input type="checkbox"/> Very Good <input type="checkbox"/> Excellent	
	Performance		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	Documentation		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	Ease of Use		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	Setup		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Serviceability	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
Value	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		

### SUMMARY

A medium-speed 386 system with a very low price tag. Pros: Relatively inexpensive; hard disk is fast. Cons: Documentation inadequate for novices.

### PRODUCT DETAILS

List price, \$1,990 (base model) with 1MB RAM, 1.2MB floppy disk, serial port, parallel port, keyboard, five 16-bit slots, one 8-bit slot, two slots for 32-bit memory, 200-watt power supply, keyboard, Model 40 (\$3,990) adds 1MB RAM, 40MB hard disk and controller, floor stand. Advanced Logic Research Inc., 10 Chrysler, Irvine, CA 92718; (714) 581-6770.

### Infoworld Benchmark Test Results For Selected 80386-Based Desktop PCs

All tests relative to the 6-MHz (Model 099) IBM PC AT as 1.00. CPU measures main processor performance; hard disk performance is tested for sequential and random data access.

SYSTEM*	CPU	Hard Disk (sequential)	Hard Disk (random)
Kaypro 386 (16/1)	2.87	1.41	2.58
ALR 386/2 (16/2)	3.07	2.09	2.49
ARC 386i (16/1)	3.11	1.10	2.35
IBM PS/2 Model 80** (16/1)	3.20	3.51	2.58
Compaq Deskpro 386 (16/1)	3.46	1.40	2.79
PC's Limited 386 (16/0)	4.00***	1.10	3.05

\*Clock speed in MHz/No. of wait states. \*\*With 70MB hard drive. \*\*\*Refresh on

SOURCE: INFOWORLD HARDWARE BENCHMARK SYSTEM



## Review Responses

### AST IMPROVES BACKUP SOFTWARE

Thank you for taking time to review the AST-2000 and AST-4000 (Product Comparison: Backup Systems for the Macintosh, August 3). We think you fairly hit on both the strengths and the weaknesses of the products.

In defense of the AST-4000 in particular, the product has proved a reliable and effective file server for Mac Serve, AppleTalk, and other environments. For such a task, the file-by-file backup requirements are negligible. Instead, the important parameters are those you mentioned as strengths: the speed of the product (both the disk and the tape), its reliability, and the support AST affords both its dealers and users.

We have also significantly improved the software component of both the AST-2000 and AST-4000 with the addition of DataVault, a proprietary backup program that will back up any SCSI disk (not just our own) either to our own tape products or to disks. Not only does DataVault include the file provisions you mentioned, but it also allows you to create "scripts" for specific types of backup sessions that then can be performed unattended. DataVault for the AST-2000 is now being shipped; the 4000 version should be available in September.

Mark LeBar  
Marketing Manager  
AST Research Inc.  
Irvine, CA

### PC'S LIMITED TELLS ITS SIDE

In your recent product comparison, "Super-Fast ATs" (July 27), a grossly inaccurate generalization was made about the PC's Limited 286-12.

The truth is that the PC's Limited 286-12 is highly compatible with industry-standard software and add-ins. This has been recognized by reviewers throughout the industry.

To provide customers with the highest system performance and throughput, the system bus was designed to run at 12 MHz, the same speed as the processor. Most add-in cards will run at 12 MHz, including extended memory boards from Intel and Profit Systems.

Our documentation has been designed to provide users with information about the system in a superior manner, as you noted. Part of this plan is providing installation instructions with our additional devices, thereby simplifying the standard system documentation.

Building for our customers machines that are of the highest possible quality is our company's commitment. One method we use to maintain this commitment is soldering in RAM. In the unlikely event that repair is necessary, an on-site service

contract from Honeywell-Bull is now included in the price of our standard system configuration.

Your readers should understand that our customers believe the PC's Limited 286-12 is one of the most compatible, highest performance personal computers available. We regret that your readers did not get this

impression from the article.

Graham C. Beachum, Jr.  
Senior Vice President  
Marketing and Sales  
PC's Limited  
Austin, TX

Although many boards do run properly in the machine, it was unable to run Intel's original

Above Board correctly. We stand by our review.

—Editors

very useful language extensions in DBXL — there are some unsupported functions that can cause serious problems for the Dbase programmer.

A minor inconvenience is that DBXL variables can be up to nine characters long, whereas Dbase allows 10-character variables. This can cause problems in running your existing Dbase programs.

A more serious problem is the inability of DBXL to have

### REACTION TO DBXL REVIEW

In your review of DBXL from Wordtech Systems (June 15), you emphasized its compatibility with the Dbase programming language. While most Dbase commands are supported in DBXL — and there are some



## Choose your favorite. \$475\*

We're not selling printers, but a new networking device that'll make it seem like you have an extra one. Or two or three.

The Buffalo SX can actually multiply the effectiveness of laser printers, dot matrix and daisy wheel printers, modems and plotters. Anyone can send work to any printer—even when it's busy—and go back to work immediately. So it can save you thousands of dollars on extra printers you don't buy.

### All the right connections

The Buffalo SX is an intelligent buffer, switcher and interface converter all in one. It allows several PC users to select any output device connected to the network.

There are ten ports—five parallel and five serial. Five can handle either input or output. So you have lots of options. Seven PCs sharing three peripherals. Two PCs sharing eight peripherals. Or any combination between.

But that's only the beginning. You can link more SXs together to share a set of peripherals with any number of PCs (of course, when you get up into the dozens, you might need another laser).

### Power windows & automatic transmission

To set up the SX, just plug it in and define the ports using the switches and software provided. Concise documentation tells you how. If you have a question, call our toll-free support line.

When someone's ready to print, they simply use the handy little menu that pops up on screen with the names you've chosen. Call your printers Martha, Chatterbox, Helix, whatever.

The SX does the rest. It handles interface conversions, making parallel and serial machines

work together. Yes, it even lets IBM® and Macintosh® PCs share a laser with no fiddling. And PCs can exchange files with communications software.

Best of all, it stores print jobs in its large buffer and feeds data to the printers automatically. So people can use their computers within seconds. ("Large" means a standard 256K memory, expandable to one full megabyte.)

### Free software bonus

Order now and receive \$100 worth of productivity tools free:

- HyperKey™ Keyboard Enhancer—increases speed and accuracy dramatically. Instant on-off for repeat keys!
- HyperDrive™ Disk Caching—makes applications run 3-5 times as fast. Fully utilizes Above® Board memory.
- Print Booster™ for 1-2-3®—freezes your PC about four times faster when printing graphs.

### All you stand to lose are long coffee breaks

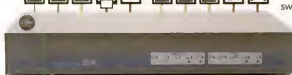
If you've tried a printer buffer, you know how limited most are. The SX is different. It's the slickest productivity booster this side of a \$10,000 LAN. It's so dependable, it comes with a full one-year warranty. Plus this money-back guarantee:

Order a Buffalo SX. Try it for 45 days. If you can part with it, send it back for an immediate refund. No questions asked. And you can keep the productivity software.

We're certain you won't give it up once you've tried it. We think you'll add more. Ask about our other low-cost buffer/switchers too. There's one for every application imaginable.

Call now. Use Visa, MasterCard or American Express. You'll save hours of frustration. Plus the cost of another laser!

Just one of dozens of network configurations possible with the versatile SX.



Buffalo Products, 859 Cowan Road, Burlingame, CA 94010 (800) 345-2356, in California (800) 543-2356

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procedures embedded in the program file that is running. For example, in a program file called **ADDEDIT.PRG**, you cannot have a command "set procedure to addedit." This common programming practice, allowable in **Dbase**, is not supported in **DBXL**. I contacted the Wordtech support technicians, who reported back that "they have no plans to support this function in the future." This serious incompatibility, along with excessive memory requirements, and inability to fully run their Intro (Assist mode) without an "insufficient memory" error message, combine to limit the compatibility of **DBXL** with **Dbase**.

Rick Hellewell  
Microcomputer System Specialist  
City of Sacramento, CA

It is with no little amazement that I read your review in which you stated that **DBXL**, Version 1.1 significantly outperforms **Dbase III**.

From my tests on production data, the Wordtech product seems vastly slower than **Dbase III**, except in its append function. For a sort of 7,388-record file, **DBXL** consumes an outrageous 404 seconds, compared to 84 seconds for **Dbase III**. Indexing the same file required 62 seconds for **DBXL** and only 44 seconds for **Dbase III**. To locate a single unkeyed file from the end of the record took 90 seconds for **DBXL** and 30 seconds for **Dbase III**. Only when appending did **DBXL** emerge a winner, by a margin of 50.44 seconds to 69 seconds for **Dbase III**. If one uses a disk cache buffering routine such as **PCSG's** **Lightning** in the memory that **Dbase III** leaves available (but **DBXL** does not), the advantage to the Ashton-Tate product becomes virtually awesome.

William C. Moncel  
Director of Computing  
Corning Community College  
Corning, NY

As a beta tester for Wordtech Systems for the last 3½ years and for **DBXL** for the last year, and as a consultant, instructor, and programmer for **Dbase II** and **III** for the last five years, I must take exception to your review of **DBXL**.

It amazes me that you make non-compatibility statements when the machine you use, the AT&T PC-6300, has a video system that is far from being compatible with any standard other than its own.

Furthermore, in addressing the product's indexing speed, it should be noted that any product that follows Ashton-Tate's indexing methodology will also follow closely its indexing speed. Foxbase, on the other hand, gains its speed from the usage of a proprietary incompatible indexing system. Therefore, I feel that this comparison of these three products was unequalled.

Foxbase (the fastest of the **Dbase** competitors we "tested") gains its speed advantages through the usage of Micro-Soft C and through optimization of **Do While** loops. Benchmarking Foxbase, using Fox's own test procedures, yielded no similar results without the usage of a math coprocessor.

A Run command will clear the screen when finished only if you have the scoreboard on. Turning the scoreboard off will cure the problem.

I consider the on-line manual provided the best I have found in any product presently on the market. I found the explanations provided superior and clearer than almost all of those found in **Dbase III's** on-line help. I find myself using it after any printed documentation

at least 75 percent of the time.

Why would anyone want the on-line manual in Intro, let alone Assist? However, for those who must have it, a simple press of the F1 key will bring it up.

Views are available in Intro. They are called "Views." However, presently you cannot store them to disk.

Error handling in **DBXL** is far and away the best in any of the **Dbase** products (**Dbase III**, Foxbase). The two competitive products do not give you the line number that the error is at or a complete textual explanation with variable field name when F1 is pressed as **DBXL** does. Additionally, no other system on the market lets you access the on-line manual, check a listing of memory variables, or see what data file you are presently in before suspending or canceling the task. I have found my debugging time cut in half by this system.

Paul D. Colvin  
Chief Scientist  
Applications Plus  
Burbank, CA

Your review of **DBXL** contains several inaccuracies which belie the care **InfoWorld** normally gives to a review. I would like to address these point by point:

• **EMS**: While the next release of **DBXL** will address EMS, the current release does not utilize EMS, despite the reviewer's repeated claims to the contrary.

• **Bugs**: You state your opinion that the product was released before it was mature. I beg to differ. I think that **DBXL** was better debugged than the first release of **Dbase III**, **Dbase III Plus**, or Foxbase, to give just a few examples. All three of those basically had to be recalled from the market due to defects.

I think your impression was based partially on a practice that Wordtech Systems, as a vendor, and **InfoWorld**, as a publication, should now review. We provided **InfoWorld** (and other publications) with early, pre-release beta copies of **DBXL** for your writers to become familiar with, so that when a final release was ready a review could be written without the overhead of getting to know the product. You mention a long list of bugs that were in the version of the product you first saw. I would bet that you were basing your initial impression on the beta version rather than the release version.

• **Buildwin**: You deeply misunderstand the purpose of our Buildwin utility (perhaps you confuse Buildwin with its sibling, Modicon). Using Buildwin, it is simply not possible to build a window "too large for the screen" because Buildwin is nothing more than a librarian to combine multiple windows into a single file.

• **Fix**: You termed it a bug that the Fix option can't open a file larger than 14K. This limitation is based on our Modify Command text editor, which can only open files of 14K or smaller. You seem unaware of the fact that the **Dbase** editor can only safely edit files of 4K or smaller. (**Dbase** rudely truncates at 4K any larger program file that it opens.) Since **DBXL** edits files three times larger than **Dbase** can handle, and gracefully refuses to open files that exceed its capacity, I hardly think it fair to call this a bug.

• **Files**: The review states that 25 files of all kinds can be opened at one time. In fact, **DBXL** supports up to 251 files open simultaneously, using DOS 3.1 or later. Using DOS 2.1, only 16 files may be open at any one time.

Overall, I think the review was a fair and well-rounded appraisal of **DBXL**. However, I think the reviewer could have

better researched some of the points raised.

Michael Gardner  
Vice President  
Research and Development  
Wordtech Systems  
Orinda, CA

We were mistaken in stating that **DBXL** uses EMS memory. We thought it did because when we disabled our Intel Above Board, we encountered memory errors that didn't occur when the Intel board was installed. In fact, however, the Intel board was simply killing our 512K system to the 640K level, so **DBXL** was merely reacting to the difference in conventional memory. We apologize for the error.

**InfoWorld** does not review beta software. We received two copies of **DBXL**, one fraught with bugs, and another that was examined for the final review. No indication was given that the first copy was a beta release. It was called **DBXL 1.1 (02/04/87)**. The second copy was **DBXL 1.1 (03/25/87)** and was marked "update." If version 1.1 is a beta, we suggest **DBXL** owners print their version numbers into the command "? version!," and exchange only marked 1.1 (02/04/87).

Our point with regard to Views is that you cannot run programs created by Quick Code unmodified, since Quick Code uses the **Dbase** version of Views.

Regarding the well-known video accommodation of the AT&T PC-6300, we cross-tested on a stock IBM PC AT with off-IBM-brand peripherals.

Regardless of whether one wants to access the on-line manual during Intro, the program should not exhibit bugs and put nonsense on the screen when attempting to do so. We tested this on two systems. With 640K and a small enough data file, we could call up the on-line manual, but with only 512K of memory and a 367K data file, we got an error message and garbage on the screen.

We had no indication in the manual that the scoreboard should have anything to do with clearing the screen. Is this a happy discovery?

We cannot find documentation of the editor's file capacity limit of 14K in the manual. When we try to edit a file too large, we are given the message: "Not enough memory now. Please try later," not an error message indicating that the file is too large for the editor.

Page 539 of our manual states specifically that the maximum number of open files is 25. Presumably this is in error.

We apologize for the misleading wording about Buildwin. We did experience a bug on the AT&T, but subsequently we have tried the same operation on an 80386 system and on an IBM PC AT and gotten the appropriate error message, and there was no problem. Evidently there is a problem with the 6300 in this regard.

Note that during the review period, as we do with all products we review, we called your technical support and discussed all of the above bugs, posing as a user of the product. Although, as we said in the review, the technician sounded knowledgeable, he could not offer any solutions; neither did he offer any reasons for the problems, nor did he claim that they did not exist.

— Editors

#### BETTER MARKS FOR WORD MARC

In your June 1 issue, a review of Word Marc Composer appeared. While your reviewer judged Word Marc Composer very good to satisfactory in all categories, several areas of obvious misinterpretation or confusion on your part could easily have misled readers.

The review said Word Marc has "intrusive menus which cannot easily be bypassed." Not true. Word Marc's Direct Entry feature provides more than 15 commands that allow more experienced users to immediately perform functions without using menus to create, edit, spell check, print, use a glossary, etc.

As stated in the review, much of Word Marc's power is based on style sheets that let the user bypass the program's forms. Style sheets control virtually all aspects of documents, including formatting, print parameters, footnote and numbering styles, and table of contents and index formats.

Once a style sheet is created, users never have to access these forms again, other than to modify the sheets. Most other word processors, including Word Perfect, with which Word Marc was often compared in this review, require all of the above to be created for every document. This wastes a lot of time.

In judging ease of use, the reviewer commented on Word Marc's on-line help coming one line at a time, as compared with Word Perfect's context-sensitive help. Word Marc always prompts users as they go, and instructions on what to do next are on the screen. Word Perfect offers the user a blank screen with no indication of how to begin. The Help command simply is not needed as often with Word Marc as it is with most word processors. Now that's real ease of use.

Software Bridge (published by Systems Compatibility Corporation and available through Marc Software and others) allows users to transfer to and from Word Marc format to most popular word processing formats, including DCA. This provides more ease of use for Word Marc users.

We, Word Marc, would have received a better and more accurate score if our technical reference manual had been accurately depicted. It was written for those with advanced technical knowledge, typically technical administrators of large sites who use it to integrate Word Marc into their total computing environment. Buying patterns of Word Marc indicate that only a small percentage of users purchase technical manuals—which are optional and should not be included in the ratings. The manual's inclusion in Word Marc's price also may have misled readers about that price.

Two more quick points. There is a growing trend in the industry to charge users for ongoing technical support, a fact not often pointed out by **InfoWorld** in reviewing word processing packages. It was, however, mentioned in the Word Marc review. The final point is that **InfoWorld** only gave passing attention to one of Word Marc's greatest strengths, that it runs on a wide range of systems, from PCs to minis, from MS-DOS to Unix, on VAXs from DEC and Primos from Prime—and more. In fact, over 75 percent of all Word Marc installations are at multivendor hardware sites.

Readers count on **InfoWorld** for accuracy, including those of us at Marc Software International Inc. We hope we've made your Word Marc review more accurate through this letter.

Gwen A. Justis  
Vice President  
Marc Software  
Palo Alto, CA

**InfoWorld** welcomes comments about its reviews. Letters are subject to editing for space and clarity. Please address correspondence to the Reviews Editor, **InfoWorld**, 1060 Marsh Road, Suite C-200, Menlo Park, CA 94025.



# On the Horizon

By William F. Zachmann

## Users Should Consider 32-Bit Alternatives to OS/2 and Unix/Xenix

While OS/2 is likely to be the operating system of the future on desktops, and Unix/Xenix will be used on multuser systems based on microprocessors, there are many competing alternatives for tapping the power of 32-bit chips. These include the latest versions of Quarterdeck's Desqview, Digital Research's Flex OS (the most recent version of Concurrent DOS), Software Link's PC-MOS 386, Phar Lap's 386/DOS-Extender, and Qualitas Inc.'s 386 to the Max.

None of these can quite offer the full range of multitasking options of OS/2 or Unix/Xenix, nor the full range of multuser capabilities of Unix/Xenix. One way or another, however, all deliver some multuser/multitasking along with access to the capabilities of the Intel 386.

These will be joined, later this fall, by what may prove to be OS/2's most vigorous rival of all on the desktop: Microsoft Windows 386. While the availability date and details of the product still have not been officially announced, Microsoft has demonstrated the product to enough people to make it clear that Windows 386 will be an appealing alternative.

Combining the basic multitasking capabilities of Windows with access to memory above 1 megabyte and use of the 386's virtual 86 mode, Windows 386

should make it possible for multiple DOS tasks to run simultaneously, including tasks that want to directly control display I/O. If Windows 386 lives up to its promise, it will offer the multiple-task capabilities of Desqview in a multiple graphical windows environment.

Just as Microsoft Windows 2.0, slated for an early fall release, creates a path toward the full OS/2 Presentation Manager that will be available sometime after the middle of next year, so Windows 386 is likely to create an early path toward the eventual release of a 386 version of OS/2 sometime in 1989. Windows 386 may be even more important, however, in that it will offer a shorter path to the 386 from Microsoft than will OS/2.

It doesn't take very long talking to key people at Microsoft to get the impression that they would have preferred directly designing OS/2 for the 386, bypassing the 286 altogether. It seems, however, that the requirements of IBM, Microsoft's largest OEM customer (combined with the recognition that 286-based systems made up a bigger piece of the market than 386-based systems would for some time), dictated the 286 focus for OS/2.

In some respects, Windows 386 may better represent Microsoft's vision of the future than does OS/2. If not deliberately constrained to reduce its impact on OS/

2, Windows 386 may prove to be the primary operating system for most 386-based desktop systems over the next few years.

In considering alternatives to OS/2 and Unix/Xenix, however, it would be shortsighted not to recognize one important competitor outside the realm of Intel-based systems entirely. I am referring to Apple's Macintosh products. Continued enhancements, in software as well as in hardware, make Apple's products serious contenders despite Apple's ongoing difficulty in achieving as much "share of mind" with corporate users as the company would like.

Like an invading force, Apple has landed commando units on the coasts and paratroopers in pockets of the heartland of corporate America. It is a rare company of any size that does not have at least a few Macintoshes.

Not only are Macintosh users typically enthusiastic about their systems, they are also not big fans of IBM and compatible systems. Some are enthusiastic proselytizers for the Mac. Others might be described as dedicated fanatics.

Improved networking options are making it easier for IBM and compatible systems and Macintosh systems not only to coexist but to freely communicate with one another. User organizations are

growing more willing to leave it up to the users to decide which systems they want, as long as they can communicate (sometimes even if they cannot).

In any case, whatever the fortunes of any given alternative, there is a high probability that the world of the future will be characterized by a broader range of alternatives and a greater choice for users than has been typical of the MS-DOS-dominated world of the recent past. Despite the probable continued success of Unix/Xenix alternatives in multuser systems and the steadily growing impact of OS/2 on the desktop, other ways of doing things are likely to gain an increasing share of the market.

Important as OS/2 and Unix are likely to be, users who want to be assured of having the best available tools for the job at hand, whatever that may be, will be well advised to continue to evaluate other alternatives. The growing variety of choices for operating systems, if constructively engaged, offers many opportunities for users to obtain more value from their investment.

William F. Zachmann is vice president of corporate research for International Data Corp., a market research firm owned by the same parent company as InfoWorld. The views expressed are his own.

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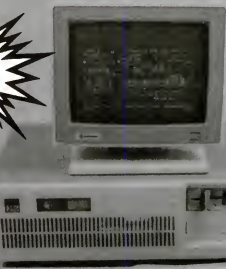






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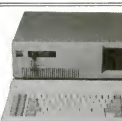
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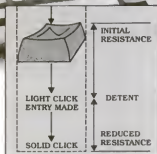
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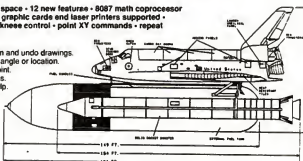
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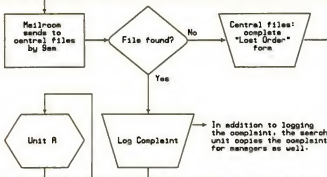
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\* March 10, 1987 issue, page 278

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## Training News

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**Rave Reviews**

PC Magazine calls the Learning Disk “more thorough, more interesting, and more enjoyable than others.” It’s the fastest and best way to learn WordPerfect.

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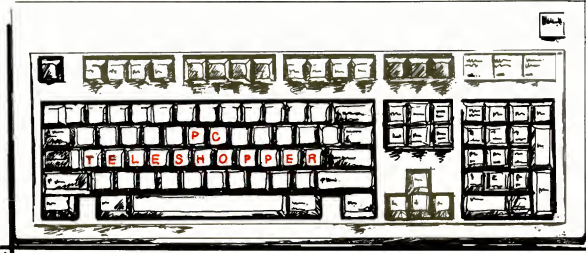
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**CATEGORIES:**

Accessories, Business Opportunities, Diskettes, Diskette Copy Services, Education, Hardware, Mailing Lists, Media Conversion Services, Publications, Buy/Lease, Seminars/Events, Services, Software, Supplies. Additional categories available upon request.

Column Width	Copy Width
1 column ad	1 13/16"
2 column ad	3 13/16"
3 column ad	5 13/16"
4 column ad	7 13/16"
5 column ad	9 13/16"

**MECHANICAL SPECIFICATIONS**

Number of Columns: 5  
Column Depth: 13"  
Full Page Copy Area: 9 13/16" x 13 3/8"  
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### MECHANICAL SPECIFICATIONS

Number of Columns: 5

Ads per Column: 5

Column Width: 1 3/4"

Ad Length: 2" (including logo)

### RATES:

1x: \$130 + \$20 first time or re-set

51x: \$110 + \$20 first time or re-set

Rates are per issue, per 2" block

SOFTWARE MARKET ads appear in a 1 column by 2" format. Categories for software packages are at the discretion of the advertiser. Logo permitted if camera ready. Charge for typesetting copy is \$20.

Closing date is every Wednesday at noon, 12 days prior to publication date. To place your SOFTWARE MARKET ad, send your copy (and payment for first time advertisers) to:

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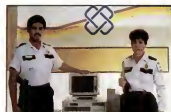
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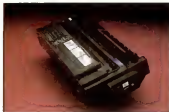
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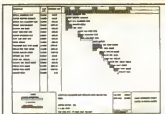
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#41	10/12	9/23
#42	10/19	9/30
#43	10/26	10/7
#44	11/2	10/14
#45	11/9	10/21
#46	11/16	10/28
#47	11/23	11/4
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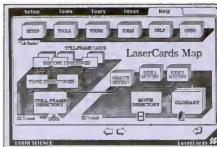


## Stackware Integrates Databases

**By Edward Warner**

**BOSTON** — Linking themselves to the Hypercard announcement, several vendors unveiled here the first members of a new software class — called stackware — which Apple said will be spawned by the arrival of the product.

Dialog of Palo Alto, California, showed Information Access, an information retrieval product that integrates three databases: a directory of recent articles in 10 U.S. newspapers; the full text of four of the papers, including the *Wall Street Journal*; and a directory of statistical profiles of major U.S. businesses. The product allows users to search the newspaper directory by topic, find the full text of the article, and then gain statistics on the company that was the subject of the article, according to Mike Liebhold, Hypermedia



The screen on the left is from an Optical Data Corp. educational program that combines stockware with a laser disc player. Tim Walker, R&D director of Optical Data, said stockware is ideal for industrial training.



## Transputers Speed Image Processing

By Scott Mace

**BOSTON** — The Macintosh is about to invade the turf of mainframes with the help of new parallel processing technology announced at Macworld Expo.

Translink, an expandable accelerator package that uses 32-bit "transputer" processors, gives the Macintosh SE or Macintosh II power to rival the number-crunching performance of a VAX 8600, said Curt Johnson, chairman of Levco, in San Diego.

Transputers, developed over the last three years by Inmos Corp., are a new kind of coprocessor with more resemblance to advanced supermini "hypercube" technology than to traditional math coprocessors, said Craig Davidson, a transputer engineer at Leuco.

The key to the transputer's power is the alteration of existing applications so that different components of the software can be run in parallel in different transputers. "You can use as many transputers as you have space or money for," Johnson said.

Levco showed a fractal-generating graphics program that normally takes more than an hour to run on an unaltered Macintosh II; the same graphics screen was drawn in three minutes with two transputer chips installed in the computer. "This demonstrates the potential of transputers to speed up image processing," Johnson said.

Other uses of transputers are for dynamic structural analysis, engineering functions such as fast Fourier transforms, and distributed database processing, Johnson said. A version of Common Lisp, used to develop expert systems, will also be available to run with Translink.

Two of Levco's Translink transputers can also run as a fast general floating-point coprocessor, running at more than one megaflop (one million floating points per second), Johnson said.

One Macintosh database publisher, Acius of Cupertino, California, is interested in re-writing its relational database, Fourth Dimension, to take advantage of Translink, Johnson said. Currently, Translink comes with a C compiler for creating applications; an assembler is also offered, Johnson said. The introductory kit for the Macintosh SE is \$1,995, which includes the interface board, one transputer, and the C compiler and associated linker. The Mac II version is \$2,495 and will be available in six to eight weeks, Johnson said.

Levco, 6160 Lusk Blvd.,  
Suite C-100, San Diego, CA  
92121; (619) 457-2011.

# Macworld

Continued From Page 1

Bill Atkinson, as a "software erector set," Hypercard provides the development tools for writing applications previously too complicated for non-programmers.

"The promise of modifying and controlling your own environment is a promise that has not been fulfilled," said Atkin-

son. "Hypercard is a personal toolkit for putting together an information environment that works the way you do."

Because Hypercard organizes data by meaning and context, users can browse or search through large bodies of information extremely quickly, making it an ideal access medium for CD ROM and video disc technology, according to Atkinson. Apple is currently working on CD ROM drivers for the program, the company said.

programs to arrive, Business Class, will be marketed by Activision Corp. of Mountain View, California, and will ship late this month at under \$100, he said.

Kevin Kelly, editor of the Sausalito, California-based *Whole Earth Catalog*, said his publication has written scripts with Hypercard that automatically translate chapters of the printed catalog into stackware "cards."

Befitting Hypercard's ability to link diverse concepts, most stackware at the show was designed for educational uses. But

products that combine software with a laser disc player will be ideal for industrial training, according to Timothy Walker, R&D director of Optical Data Corp., an education-market vendor, in Florham, New Jersey, which makes such a product.

Hypercard also seemed to excite some vendors from the PC sector, including Dan Bricklin, president of Software Garden, in Newton, Massachusetts. "There's been a variety of programs in this area," Bricklin said. "This seems to be the best."

uted on disk at first but will eventually be put in the system's ROM, according to Apple's higher education marketing manager Bud Colligan.

Attendees of Macworld Expo also viewed Multifinder, Apple's new multitasking operating system, which supports fast switching between applications and interprocess communications on the Mac II, SE, and Plus.

Multifinder, expected to be available in late September, was developed inside Apple by Eric Ringwald and Phil Goldman. The program lets users open as many as 30 applications at once, and supports background laser printing. Other applications such as electronic mail and terminal emulation can be performed in the background, usually with slight modification to the programs.

When used with AST Research's DOS coprocessing cards, which allow Mac IIs to run DOS software, Multifinder will make information sharing between operating systems easier, Apple said.

Sculley described the arrival of multitasking and other technologies as bringing Apple a step closer to "interpersonal computing." "We've seen the success of single-task applications, but now we're starting to move from that," he said.

Current Mac users can receive copies of Hypercard and Multifinder for \$49 each.

Apple also announced the Imagewriter LQ dot-matrix printer and a FAX modem that transmits facsimile documents at 9600 bps. The company also demonstrated the PC AppleShare program and Ethernet network adapter for the Mac II.

(See related stories, pages 21-22.)

## Apple Takes Its First Step Into Multitasking

**A**pple's announcement that it has built a precursor to multitasking into its Multi-finder, following IBM and Microsoft's OS/2 announcement in April, has turned up the heat on the topic of multitasking operating systems for micros.

A multitasking operating system executes several instructions (and, by definition, applications) concurrently. During concurrent execution, each program informs the operating system of its actions and resource needs by a technique known as interprocess communication (IPC). IPC also allows concurrent applications to talk to each other.

True multitasking offers a number of benefits to the micro user. Applications can be integrated easily without resorting to special vendor-specific methods of IPC (or tricks to simulate it that often cause problems). High-performance background print spooling, communication, terminal emulation, and electronic mail can all run without a lot of additional overhead.

Multitasking also offers micro users the opportunity to run different user environments, or even different operating systems, at the same time. The applications running under the several operating systems can communicate with each other, thus allowing a full integration of functions and capabilities.

It's important, therefore, to realize that

Apple's Multifinder (unlike the promised OS/2) is not at present a true multitasking system. It does not do foreground concurrent processing. Limitations of the 68000 CPU and of current Mac applications prevented Apple from producing a true multitasking system with this first go-round.

What the Multifinder does is some very clever and fast context switching (like Switcher, only better integrated with the Finder and other Mac applications), while allowing some background concurrent processing to occur. The background processing, mostly communications and print spooling, uses a programming construct called "wait-next-event" to handle the processor interrupts.

At some point down the line, expect to see Apple make the jump to true multitasking with an operating system that will only run on the Mac II (and Mac III, etc.). That OS will use the Mac II's full 32-bit 68020 processor and memory address space, its Nubus slots, and its hardware support for virtual memory.

Multifinder is Apple's first step in the direction of multitasking and all the benefits it offers. Unfortunately, offering true multitasking will require a break from upward compatibility with current limited Mac applications, something the hardware of the Mac II presaged when it was announced in March.

— *Don Crabb*





### Summertime — When the Rumors Come Easy

It's summertime, and the livin' is supposed to be easy, but I got plenty of nothin' until about five minutes before my deadline. Just when I started telling myself, "Stress, you is my woman now," the rumors started flying. Keep in mind though, I told my editor, that a rumor is a sometimes thing, and it ain't necessarily so. . . .

**THE LAST LAUGH.** The next version of Ashton-Tate's Framework is being developed by a small software shop in Laguna Beach, California. Code-named Voyager, Framework 3 will feature a 23 percent saving on disk space, 31 percent faster

memory, extended graphics, and supposedly twice the functions of Lotus 1-2-3. Release date is scheduled for January 1988.

Security has been fairly tight at the firm, which was founded by a former Ashton-Tate employee. Last week, though, employees of other companies in the same office building overheard visiting Ashton-Tate executives cackling over inaccurate rumors that were published in the trade press. The door was left wide open, the execs talked a little too loudly about what the *real* specs were, and the rest is history. I guess the joke went a little too far, eh?

**STOPPED IN THEIR TRACKS.** An organization calling itself STOP (Software Theft Opposition Project) is urging those persons who get their income — or thrills — from illegally copying PC software to volunteer for what sounds like an extended bout of psychoanalysis. The goal? To discover why software pirates do the things they do.

Pirates who agree to participate on STOP's electronic bulletin board can feel secure, claims the memo. "Although you will be asked to give us your real name and real phone number, we guarantee that this information will be kept completely confidential," states the release.

Right. I can see those pirates lining up to confess. . . .

**I GIVE YOU MY WORD.** Microsoft has issued an internal memo stating that anyone who buys Microsoft Word 3.11 for the PC after July 1, 1987, can obtain a free upgrade to 4.0 if they send in proof of purchase and a registration card. Since current discounting leaves Word 3.11 with a street price of approximately \$175 — and since Word 4.0 (to be released in mid-September) will have a street price ranging from \$225 to \$245 — anyone wanting Word 4.0 should buy 3.11 now and save themselves some money.

**AS THE MACWORLD TURNS . . .** Rumors about Apple's next moves were rampant at the Macworld Expo in Boston last week, but the only one everybody seems to agree on is that Apple's scanner is back on track — and we should see it at the Seybold desktop publishing show in September. And Sculley told reporters that although a portable from Apple is not imminent, it's not out of the question.

A Mac SE sans monitor is imminent though, or so I hear from sources. The machine's known as the "four-slot." Course, there are some camps who think it's going to have a 68020.

One button seen around Boston last week was promoting something called Desktop Partying. Could this be Sculley's new concept of "interpersonal computing" carried to the extreme?

Finally, Interleaf, maker of the famed publishing system for Sun workstations, is going to enter the Mac market soon, with — you guessed it — a version for the Mac II. I'm expecting a slick, high-end package out of these guys, and if it gets out soon enough, Aldus could be shaking in its Comdex boots.

**PC EXPOSE?** Epson's odd all-points bulletin last week — that it is raising the prices of a number of its printers while dropping the price on its high-end Equity 3 Plus — raised speculation that these price realignments signal Epson plans to introduce at PC Expo one or more low-end printers and a new high-end PC. Could it possibly be a 386-based system?

**NOT LIGHT READING.** Last week Microsoft shipped out the three-volume, eight-pound specifications of its Presentation Manager to software developers, answering such burning questions as: Will Flight Simulator work with OS/2? (Yes!) Will the OS/2 developer kit run on PS/2 machines? (Oddly enough, the answer is no — not until fourth quarter.) Is there any way developers can use these specs to prepare for 386 OS/2? (No — tough luck!)

But the ultimate Microsoftian answer was in response to the question everyone is asking: What are the differences between IBM's and Microsoft's versions of the Presentation Manager? The answer showed the fancy footwork Microsoft is so famous for: "The product is being jointly developed using common specifications and source code. There should be no differences. Of course, IBM, like any OEM, may elect to add their own additional components." Yep. Clear as mud.

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